

**REPORT NUMBER: 214D-MGA-2010-008**

**SAFETY COMPLIANCE TESTING FOR FMVSS 214  
SIDE IMPACT PROTECTION**

**FORD MOTOR COMPANY  
2010 FORD TAURUS SE 4-DR SEDAN  
NHTSA NUMBER: CA0206**

**PREPARED BY:  
MGA RESEARCH CORPORATION  
5000 WARREN ROAD  
BURLINGTON, WI 53105**




**Test Date: March 16, 2010**

**Report Date: April 8, 2010**

**FINAL REPORT**

**PREPARED FOR:  
U.S. DEPARTMENT OF TRANSPORTATION  
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
ENFORCEMENT  
OFFICE OF VEHICLE SAFETY COMPLIANCE  
1200 NEW JERSEY AVENUE, SE  
WEST BUILDING (NVS-220)  
WASHINGTON, DC 20590**

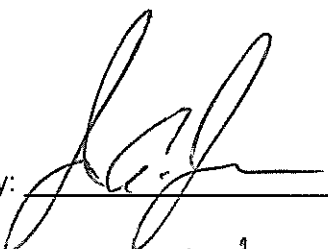
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Prepared by:   
Donna Janovicz, Project Manager

Approved by:   
Joe Fleck, Project Engineer

Approval Date: April 8, 2010

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Accepted by: 

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### Technical Report Documentation Page

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<b>12. Sponsoring Agency Name and Address</b> U.S. Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Safety Compliance 1200 New Jersey Ave, SE, Room W43-503 Washington, DC 20590		<b>13. Type of Report and Period Covered:</b> Final Test Report 3/16/2010 to 4/08/2010																												
		<b>14. Sponsoring Agency Code</b> NVS-220																												
<b>15. Supplementary Notes</b>																														
<b>16. Abstract</b> <p>A 48/24 km/h 90° Impact (Moving Deformable Barrier) Compliance Tests was conducted on the subject 2010 Ford Taurus SE 4-Dr Sedan in accordance with the specifications of the Office of Vehicle Safety Compliance TP-214D-09 for the determination of FMVSS No. 214 Side Impact Protection compliance. The test was conducted at MGA Research Corporation, in Burlington, Wisconsin, on March 16, 2010.</p> <p>The impact velocity of the Moving Deformable Barrier (MDB) was 52.8 km/h, and the ambient temperature at the struck side (driver side) of the target vehicle at the time of impact was 21°C. The target vehicle's post-test maximum crush was 187 mm at level 2. The test vehicle's occupant performance is as follows:</p> <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 15%;"></th> <th style="width: 45%;">Measurement Description</th> <th style="width: 15%;">Units</th> <th style="width: 25%;">Result</th> </tr> </thead> <tbody> <tr> <td rowspan="4">ES-2re</td> <td>Head Injury Criteria (HIC<sub>36</sub>)</td> <td>N/A</td> <td>79</td> </tr> <tr> <td>Max. Rib Deflection</td> <td>mm</td> <td>23.4</td> </tr> <tr> <td>Sum of Abdomen Forces</td> <td>N</td> <td>831.9</td> </tr> <tr> <td>Pubic Symphysis Force</td> <td>N</td> <td>1329.6</td> </tr> <tr> <td rowspan="3">SID-IIs</td> <td>Head Injury Criteria (HIC<sub>36</sub>)</td> <td>N/A</td> <td>216</td> </tr> <tr> <td>Spine Resultant</td> <td>g's</td> <td>46.1</td> </tr> <tr> <td>Sum of Acetabular and Iliac</td> <td>N</td> <td>3223.4</td> </tr> </tbody> </table> <p>The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.</p>					Measurement Description	Units	Result	ES-2re	Head Injury Criteria (HIC <sub>36</sub> )	N/A	79	Max. Rib Deflection	mm	23.4	Sum of Abdomen Forces	N	831.9	Pubic Symphysis Force	N	1329.6	SID-IIs	Head Injury Criteria (HIC <sub>36</sub> )	N/A	216	Spine Resultant	g's	46.1	Sum of Acetabular and Iliac	N	3223.4
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<b>17. Key Words</b> Compliance Testing Side Impact Protection MDB ES-2re SID-IIs		<b>18. Distribution Statement</b> Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services (TIS) Room E12-100 East Building 1200 New Jersey Ave. Washington, D.C. 20590 Telephone No. (202) 366-2588																												
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## **SECTION 1**

### **PURPOSE AND SUMMARY OF TEST**

#### **PURPOSE**

This moving deformable barrier side impact test is part of the FY 2010 FMVSS 214 Side Impact Protection Compliance Test Program sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-07-D-00062. The purpose of this test was to evaluate side impact protection in a 2010 Ford Taurus SE 4-Dr Sedan. The side impact test was conducted in accordance with the Office of Vehicle Safety Compliance's Laboratory Test Procedure (TP-214D-09, dated July 2009).

#### **SUMMARY**

A 2010 Ford Taurus SE 4-Dr Sedan was impacted on the left or driver's side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 52.8 km/h (32.8 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by MGA Research Corporation in Burlington, Wisconsin, on March 16, 2010. Pre-test and post-test photographs of the test vehicle, the MDB, and test dummies are included in Appendix A of this report.

Test dummies were placed in both the driver and left rear designated seating position according to instructions specified in the OVSC Test Procedure dated July 2009. The side impact event was documented by nine (9) cameras. Camera locations and other pertinent camera information are included in this report.

The ES-2re male dummy was instrumented with a triaxial accelerometer pack located in the head, 3 rib displacement transducers located in the chest, 3 load cells located in the abdomen and a load cell located in the pubic symphysis.

The SID-IIs female dummy was instrumented with triaxial accelerometer packs located in the head and the spine and load cells located in the pubic symphysis and acetabulum. A summary of each dummy's configuration and performance verification test data has been included in this report along with the dummy response traces.

A summary of the test results follows:

#### DUMMY INJURY VALUES

Dummy	HIC (36ms)	Thorax Deflection (mm)		Abdomen Forces (N)		Pubic Symphysis (N)
ES-2re 50 <sup>th</sup> Percentile Male	78.9	Upper	18.7	Front	231.6	1329.6
		Middle	20.9	Mid	263.8	
		Lower	23.4	Rear	376.9	
		Maximum	23.4	Sum	831.9	

Dummy	HIC (36ms)	Spine Acceleration (g's)		Acetabular (N)	Iliac (N)
SID-IIs 5 <sup>th</sup> Percentile Female	215.8		Maximum	2736.0	602.6
		X	-15.2		
		Y	45.9		
		Z	-5.3		
		Resultant	46.1	Sum 3223.4 N @ 57.3 ms	

#### GENERAL COMMENTS

None

MGA does not endorse or certify products. The manufacturer's name appears solely for identification purposes.

**SECTION 2**  
**OCCUPANT AND VEHICLE INFORMATION**

**DATA SHEET NO. 1**  
**TEST VEHICLE INFORMATION AND OPTIONS**

Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan  
Test Program: FMVSS 214 MDB

NHTSA No. CA0206  
Test Date: 3/16/2010

VEHICLE INFORMATION	
Make	Ford
Model	Taurus
Body Style	Sedan
VIN	1FAHP2DW0AG137348
Body Color	Ingot Silver Metallic
Engine Displacement (L)	3.5
# of Cylinders	6
Engine Placement	Lateral
Transmission Type	Automatic
Transmission Speeds	6-Speed
Overdrive	Yes
Final Drive	Front
Odometer Reading	73 miles

OPTIONS	
ESC	Yes
All Wheel Drive	No
Power Steering	Yes
Tilt Steering Wheel	Yes
Driver Side Curtain Airbag	Yes
Driver Side Torso Airbag	Yes
Driver Combo Bag	No
Driver Seat Belt Pretensioners	Yes
Driver Seat Belt Load Limiters	Yes
Driver Power Seats	Yes
Rear Pass. Curtain Airbag	Yes
Rear Pass. Side Torso Airbag	No
Rear Pass. Seat Belt Pretensioners	No
Rear Pass. Seat Belt Load Limiters	No
Rear Pass. Power Seats	No
Power Windows	Yes
Air Conditioning	Yes
AM/FM CD	Yes
Automatic Door Locks (ADL)	Yes
Does owner's manual provide instructions to disable ADL's?	Yes
Anti-Lock Brakes	Yes

**DATA FROM CERTIFICATION LABEL**

Manufactured By	Ford Motor Company
Date of Manufacture	01/10

GVWR (kg)	2386
GAWR Front (kg)	1279
GAWR Rear (kg)	1143

**VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION**

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bucket		
Number of Occupants	2	3		5
Capacity Weight (VCW) (kg)				430
Cargo Weight (RCLW) (kg)				90

**DATA SHEET NO. 2****GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan  
 Test Program: FMVSS 214 MDB

NHTSA No. CA0206  
 Test Date: 3/16/2010

**TIRE PRESSURES**

	Units	LF	RF	RR	LR
As Delivered	kPa	260	260	260	260
As Tested	kPa	260	260	260	260

**TEST VEHICLE WEIGHTS**

	Units	As Delivered			Fully Loaded			As Tested		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	550.2	349.3		586.9	450.0		596.9	440.5	
Right	kg	539.8	352.0		542.1	432.3		545.3	422.7	
Ratio	%	60.8	39.2		56.1	43.9		57.0	43.0	
Totals	kg	1090.0	701.3	1791.3	1129.0	882.3	2011.3	1142.2	863.2	2005.4

**TEST VEHICLE TARGET WEIGHT (TVTW) CALCULATION**

Measured Parameter	Units	Value
As Delivered Weight	kg	1791.3
Weight of 2 P572 ATDs	kg	129.3
Rated Cargo/Luggage Weight (RCLW)	kg	90
Calculated Target Vehicle Test Weight (TVTW)	kg	2010.6

**TEST VEHICLE ATTITUDES**

	Units	LF	RF	RR	LR
Fully Loaded	mm	737	743	747	760
As Tested	mm	738	742	756	760
Difference	mm	-1	1	-9	0

**CALCULATION OF THE VERTICAL IMPACT REFERENCE LINE**

Measurement Parameter	Units	Value
Test Vehicle Wheel Base	mm	2872
Vertical Impact Reference Line (Aft of Front Axle)	mm	496

**WEIGHT of BALLAST and VEHICLE COMPONENTS REMOVED TO MEET TVTW**

Description of Component	Weight (kg)
Ballast – trunk floor	60.3
Spare tire, jack, tools, trunk carpet, RF side mirror, RR taillight, rear floor mat.	24.5

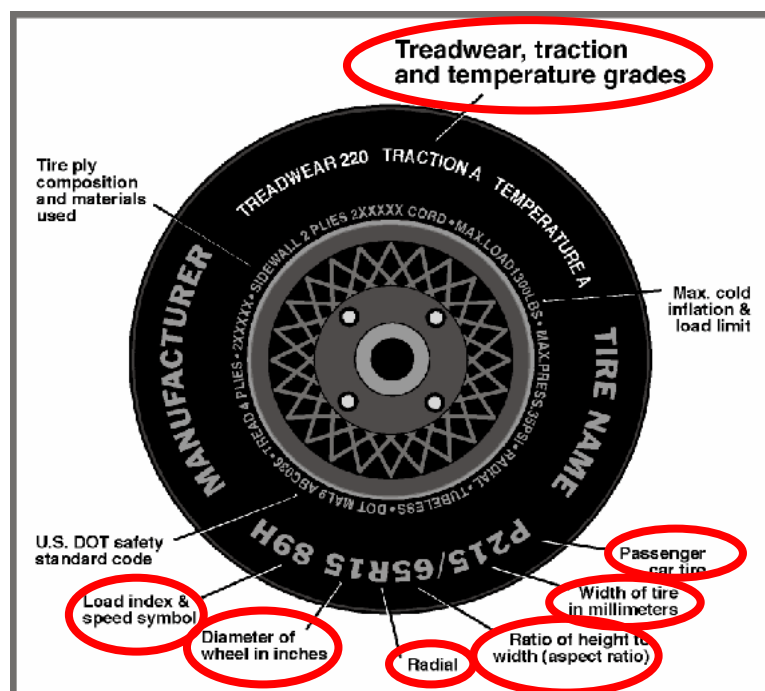
## DATA SHEET NO. 3

### VEHICLE TIRE INFORMATION

Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan  
 Test Program: FMVSS 214 MDB

NHTSA No. CA0206  
 Test Date: 3/16/2010

### VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	260	260
Recommended Tire Size	P235/60R17	P235/60R17
Tire Size on Vehicle	P235/60R17	P235/60R17
Tire Manufacturer	Hankook	Hankook
Tire Name	Optimo H725	Optimo H725
Tire Type	Passenger	Passenger
Tire Width	235	235
Aspect Ratio	60	60
Radial	R	R
Wheel Diameter	17	17
Load Index/Speed Symbol	100T	100T
Treadwear	740	740
Traction Grade	A	A
Temperature Grade	B	B

## DATA SHEET NO. 4

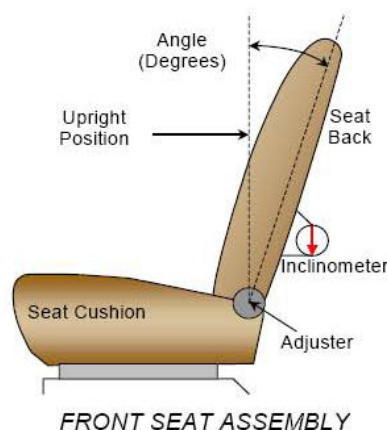
### SEAT AND SEAT BELT ADJUSTMENT DATA

Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan  
Test Program: FMVSS 214 MDB

NHTSA No. CA0206  
Test Date: 3/16/2010

#### NORMAL DESIGN RIDING POSITION

The driver and passenger seat backs are positioned to the manufacturer's designated angle. The procedure is as follows: For the driver, set the seat back at 22 degrees, 13 inches above the pivot point. For the left rear passenger, the seat back is fixed.



#### SEAT BACK ANGLES

	Degrees	Detents
Driver with Seated Dummy	22	
Passenger with Seated Dummy	Fixed	

#### SEAT FORE/AFT POSITIONS

The method used for determining seat fore/aft positions is as follows:

#### SEAT FORE/AFT POSITIONING

	Total Fore/Aft Travel	Placed in Position #
Front Seat	270 mm	135 mm
Rear Seat	Fixed	Fixed

#### SEAT BELT UPPER ANCHORAGES

The method of positioning the seat belt upper anchorages is as follows:

#### SEAT BELT UPPER ANCHORAGES

	Total # of Positions	Placed in Position #
Driver Seat	75 mm Range	Full up
Rear Seat	Fixed	Fixed

## DATA SHEET NO. 5

### FUEL SYSTEMS AND STEERING WHEEL POSITION DATA

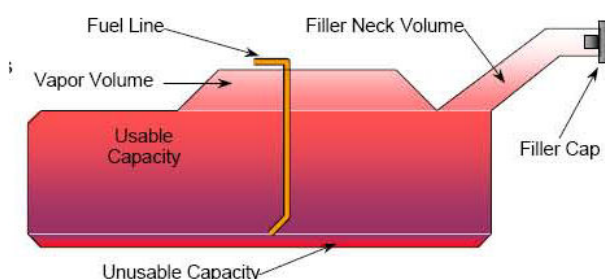
Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan  
 Test Program: FMVSS 214 MDB

NHTSA No. CA0206  
 Test Date: 3/16/2010

#### FUEL TANK CAPACITY

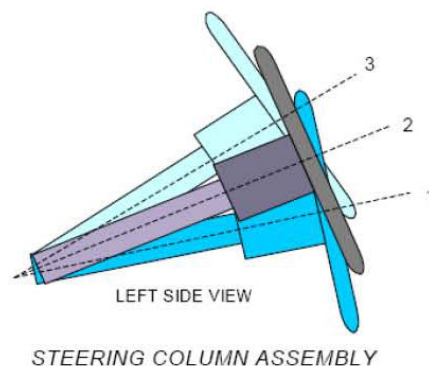
	Liters
Usable Capacity (Form 1)	71.9
Usable Capacity (Owner's Manual)	71.9
92-94% of Usable Capacity	66.1 to 67.6
Actual Amount of Solvent Used	66.9

Describe the fuel pump type, its behavior, and the location of the fuel filler pipe. The test vehicle is equipped with an electric fuel pump. The electric fuel pump operates for 2 seconds to pressurize the fuel system following the actuation of the ignition. If no attempt has been made to start the engine within 2 seconds following ignition actuation the fuel pump will shut off. The fuel pump operates continuously while the engine is running. If the engine stalls the fuel pump is deactivated. Also, a fuel pump shut-off switch is provided, designed to stop fuel flow to the engine if the vehicle sustains an impact above a certain magnitude. The fuel pipe is on the right side.



#### STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the center of its geometric locus it describes when it moves through its full range of motion. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed on the plate and the angle is measured.



#### STEERING COLUMN POSITIONING

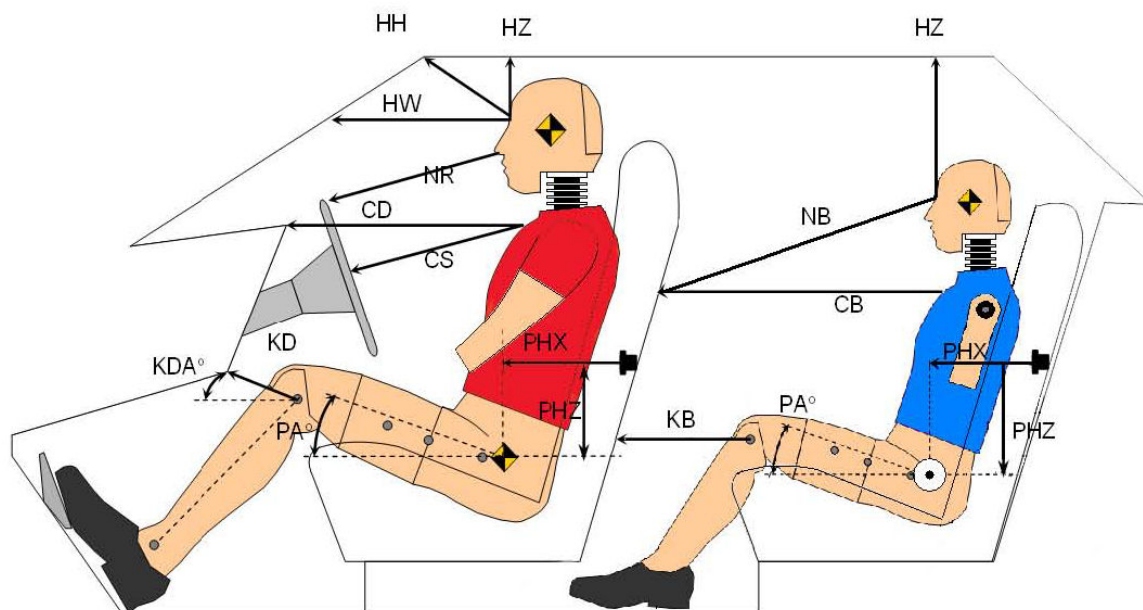
	Degrees	Fore/Aft Position (mm)
Lowermost - Position 1	69.0	150
Geometric Center – Position 2	66.1	125
Uppermost – Position 3	63.2	100
Telescoping Steering Wheel Travel		50
Test Position	66.1	125



**.DATA SHEET NO. 6**  
**DUMMY LONGITUDINAL CLEARANCE DIMENSIONS**

Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan  
 Test Program: FMVSS 214 MDB

NHTSA No. CA0206  
 Test Date: 3/16/2010



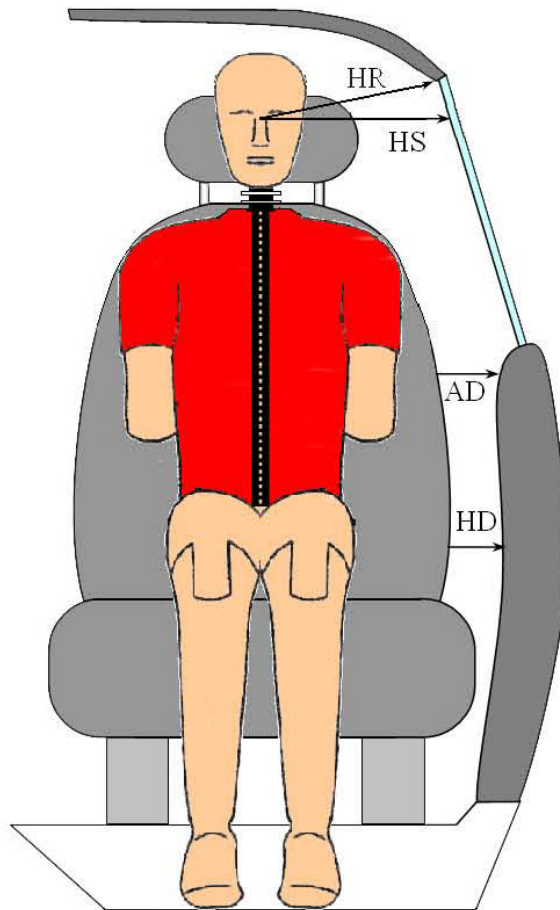
NOTE: 4-door vehicle shown. Rear dummy PHX and PHZ measurements for a 2-door vehicle would use the B-post striker as a reference point.

Front Occupant Code	Rear Occupant Code	Measurement Description	ES-2re		SID-IIs	
			Length (mm)	Angle (°)	Length (mm)	Angle (°)
HH		Head to Header	426			
HW		Head to Windshield	696			
HZ	HZ	Head to Roof	193		246	
NR	NB	Nose to Rim/Seat Back	452		565	
CD	CB	Chest to Dash/Seat Back	603		563	
CS		Chest to Steering Wheel	369			
KDL	KBL	Left Knee to Dash/Seat Back	171	23.1	390	4.1
KDR	KBR	Right Knee to Dash/Seat Back	143	36.3	288	4.0
PA	PA	Pelvic Angle		23.8		21.6
PHX	PHX	H-Point to Striker (X-Axis)	168		216	
PHZ	PHZ	H-Point to Striker (Z-Axis)	156		238	

**DATA SHEET NO. 7**  
**DUMMY LATERAL CLEARANCE DIMENSIONS**

Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan  
Test Program: FMVSS 214 MDB

NHTSA No. CA0206  
Test Date: 3/16/2010

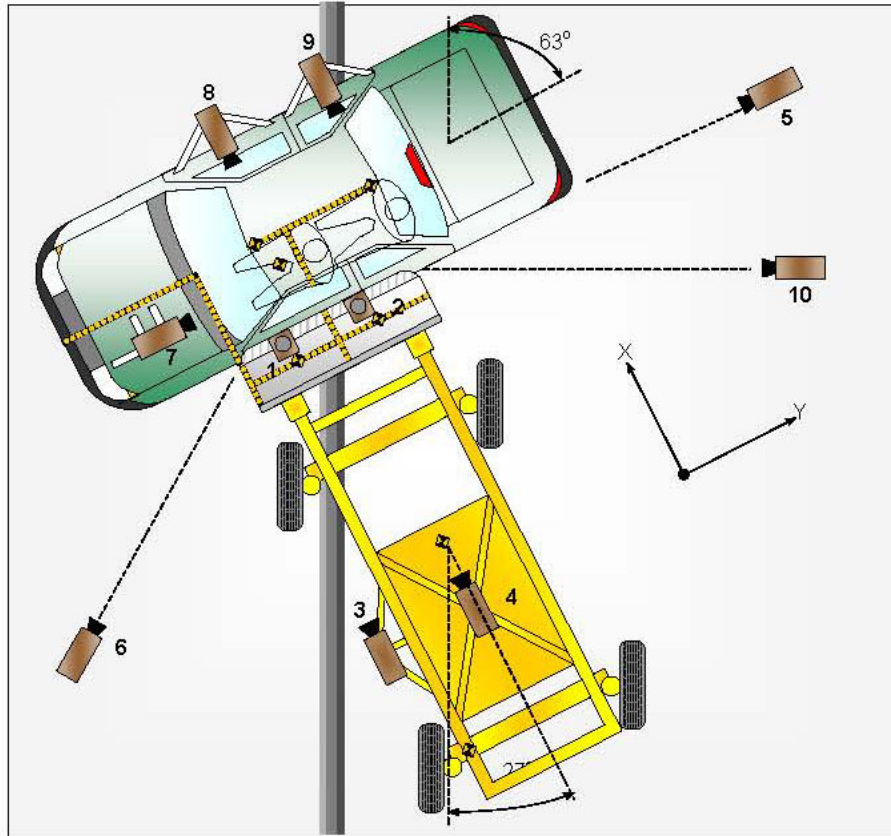


Code	Measurement Description	Units	Front Occupant	Rear Occupant
HR	Head to Side Header	mm	195	229
HS	Head to Side Window	mm	340	388
AD	Arm to Door	mm	93	147
HD	H-Point to Door	mm	165	162

**DATA SHEET NO. 8**  
**CAMERA LOCATIONS AND DATA**

Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan  
 Test Program: FMVSS 214 MDB

NHTSA No. CA0206  
 Test Date: 3/16/2010



Reference: Impact Point projected to Ground  
 +X = To Front of MDB, +Y = To Right of MDB, +Z = Down  
 All measurements accurate to  $\pm 6$  mm

Camera No.	View	Coordinates (mm)			Lens (mm)	Film Speed (fps)
		X	Y	Z		
1	Overhead Overall	640	1250	-5050	14	1000
2	Overhead Close-up	-530	-245	-5050	50	1000
3	Impact Point Close-up (MDB)				50	1000
4	Centerline of Impact (MDB)				16	1000
5	Right Side View	60	7260	-1240	24	1000
6	Left Side View	-1520	-5270	-1270	24	1000
7	Front Seat Occupant – Front				12.5	1000
8	Front Seat Occupant – Side				8	1000
9	Rear Passenger – Side				8	1000
10	Real-Time				13	24

## DATA SHEET NO. 9

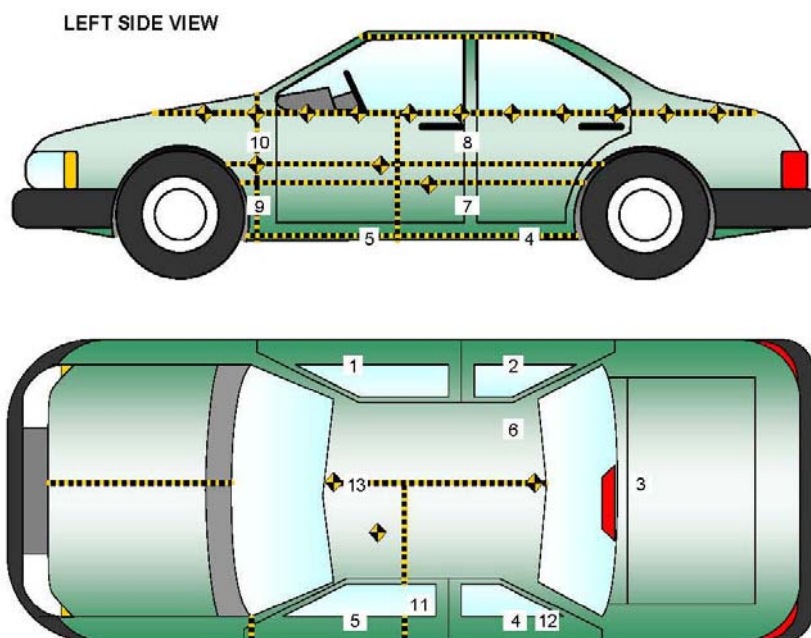
### TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan

NHTSA No. CA0206

Test Program: FMVSS 214 MDB

Test Date: 3/16/2010



Loc. No.	Accelerometer Location			
	ID	Coordinates (mm)		
		X	Y	Z
1	Right Sill at Front Seat	2807	748	-209
2	Right Sill at Rear Seat	1844	748	-253
3	Rear Floorpan Above Axle	1349	0	-580
4	Left Sill at Rear Door	1835	-748	-252
5	Left Sill at Front Door	2768	-748	-215
6	Right Rear Occ. Compartment	2094	375	-282
7	Left B-Post Lower	2565	-725	-616
8	Left B-Post Middle	2517	-725	-847
9	Left A-Post Lower	3454	-667	-587
10	Left A-Post Middle	3466	-832	-814
11	Front Seat Track	2559	-590	-374
12	Rear Seat Track or Structure			
13	Vehicle CG	2804	190	-222

Reference: X – Test Vehicle Rear Bumper (+ forward)  
Y – Test Vehicle Centerline (+ to right)  
Z – Ground Plane (+ down)

**DATA SHEET NO. 10**  
**TEST VEHICLE ACCELEROMETER DATA SUMMARY**

Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan  
Test Program: FMVSS 214 MDB

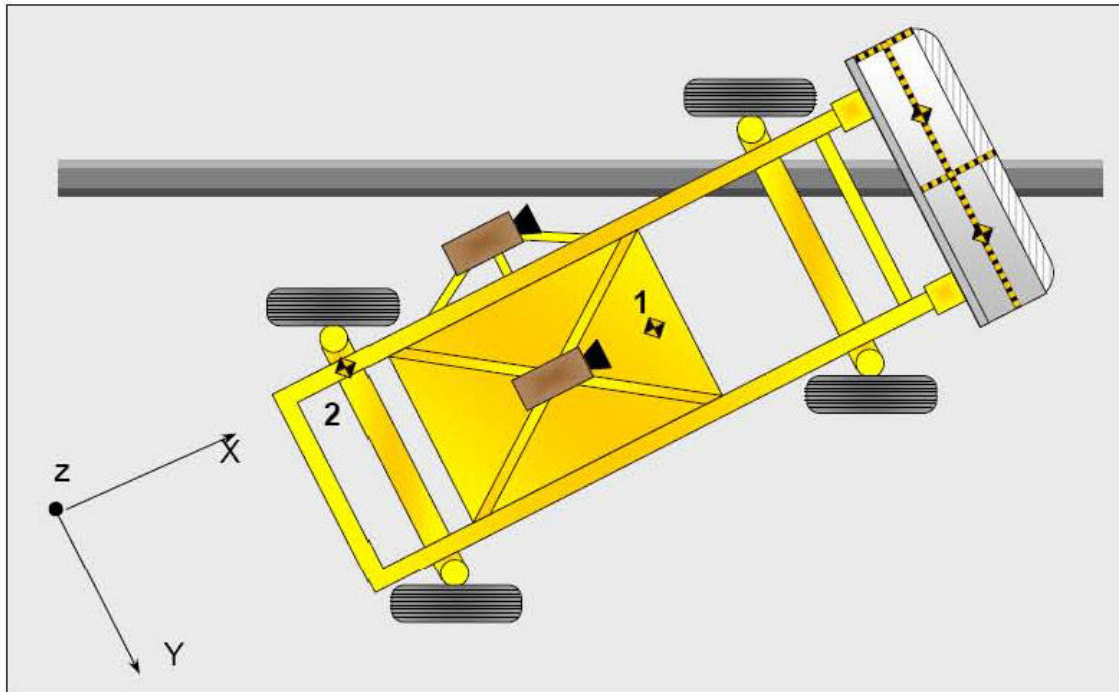
NHTSA No. CA0206  
Test Date: 3/16/2010

Loc. No.	Description	Peak Values (g's)			
		Max	Time (ms)	Min	Time (ms)
1	Right Sill at Front Seat (X)	2.7	55.5	-4.2	13.3
	Right Sill at Front Seat (Y)	27.9	7.6	-3.1	137.4
	Right Sill at Front Seat (Z)	6.1	35.3	-8.6	8.6
	Resultant	29.0	7.7		
2	Right Sill at Rear Seat (X)	4.2	33.3	-4.6	13.5
	Right Sill at Rear Seat (Y)	27.6	7.2	-3.1	81.7
	Right Sill at Rear Seat (Z)	5.5	33.8	-5.3	23.4
	Resultant	27.6	7.2		
3	Rear Floorpan Above Axle (X)	1.4	56.6	-9.1	43.5
	Rear Floorpan Above Axle (Y)	22.1	7.6	-2.7	115.6
	Rear Floorpan Above Axle (Z)	15.8	38.4	-14.3	43.8
	Resultant	25.8	44.0		
4	Left Sill at Rear Door (Y)	53.5	5.9	-13.8	38.0
5	Left Sill at Front Door (Y)	63.6	4.5	-24.1	9.1
6	Right Rear Occ. Compartment (Y)	22.5	6.4	-2.7	137.9
7	Left B-Post Lower (Y)	101.1	4.7	-50.3	18.1
8	Left B-Post Middle (Y)	124.9	4.7	-22.2	32.0
9	Left A-Post Lower (Y)	27.9	10.0	-3.2	17.5
10	Left A-Post Middle (Y)	35.7	1.1	-7.5	16.9
11	Front Seat Track (Y)	35.9	5.4	-9.0	55.2
12	Rear Seat Track or Structure (Y)				
13	Vehicle CG (X)	2.3	55.2	-4.4	35.8
	Vehicle CG (Y)	23.0	7.2	-2.9	137.8
	Vehicle CG (Z)	8.6	31.1	-12.6	6.4
	Resultant	25.9	6.8		

**DATA SHEET NO. 11**  
**MDB ACCELEROMETER LOCATIONS AND DATA SUMMARY**

Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan  
 Test Program: FMVSS 214 MDB

NHTSA No. CA0206  
 Test Date: 3/16/2010



No.	Accelerometer Location	Coordinates (mm)			Peak Values (g's)				
		X	Y	Z	Axis	Max	Time	Min	Time
1	MDB CG	-1105	0	-330	X	1.2	125.6	-18.5	49.3
					Y	1.7	61.7	-5.8	46.8
					Z	16.3	18.6	-11.3	35.9
					RES	22.8	18.7		
2	MDB Rear	-2580	-650	-625	X	1.6	118.1	-21.7	41.1
					Y	3.3	38.2	-2.3	57.8

Reference: + X = Forward  
 + Y = To Right  
 + Z = Down

**DATA SHEET NO. 12**  
**MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS**

Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan  
 Test Program: FMVSS 214 MDB

NHTSA No. CA0206  
 Test Date: 3/16/2010

**MDB SPECIFICATIONS**

Measurement Description	Requirement	Value
Overall Width of Framework Carriage (mm)	1241-1261	1252
Overall Length Including Honeycomb Face (mm)	4140-3990	4115
Wheelbase of Framework Carriage (mm)	2566-2616	2592
C.G. Location Aft of Front Axle (mm)		1129
MDB Front Axle Weight (kg)		768.6
MDB Rear Axle Weight (kg)		592.9
MDB Total Weight (kg)	1356.5-1365.5	1361.5

**SPEED AND IMPACT ANGLE DATA**

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	52.1 to 53.8	52.8
Trap No. 2 Velocity (Redundant)	km/h	52.1 to 53.8	53.1
MDB C/L to Target Vehicle C/L	degrees	88.5 to 91.5	89.7

**MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE**

Vertical Location			Front Centerline		Maximum Crush (mm)
Row	Description	Height (mm)	Distance (mm)	Direction	
1	Center of Bumper	432	800	Left	164
2	Top of Bumper	533	800	Left	106
3	Mid-Level	686	800	Left	81
4	Top of Stack	813	800	Left	96

**MDB IMPACT POINT DATA**

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	2 mm forward
Vertical Offset	mm	+/-20	10 mm up



**DATA SHEET NO. 13**  
**DUMMY INJURY RESPONSE DATA FOR ES-2re**

Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan  
Test Program: FMVSS 214 MDB

NHTSA No. CA0206  
Test Date: 3/16/2010

Dummy S/N	Positive		Negative	
	MAX	TIME (ms)	MAX	TIME (ms)
HEAD ACCELERATION (G)				
Longitudinal (X)	4.2	157.7	-13.9	43.5
Lateral (Y)	29.0	47.4	-3.9	300.0
Vertical (Z)	7.7	31.6	-5.8	54.8
Resultant (R)	31.8	47.4		
HIC36 (t1, t2)	78.8		t1 = 28.0	t2 = 58.1
THORAX DEFLECTION (mm)				
Upper Rib	2.8	68.7	-18.7	42.6
Middle Rib	2.8	72.0	-20.9	42.2
Lower Rib	2.2	75.9	-23.4	41.4
ABDOMINAL FORCES (N)				
Front	231.6	45.7	-56.3	133.6
Middle	263.8	47.5	-60.5	134.0
Rear	376.8	45.8	-55.9	74.1
Sum	831.8	45.8	-93.7	77.9
PELVIS FORCE (N)				
Pubic Symphysis (Y)	54.7	159.5	-1329.5	48.8

Reference:

	Positive Direction	-Longitudinal	(X) = forward
		-Lateral	(Y) = to right
		-Vertical	(Z) = down



**DATA SHEET NO. 14**

**DUMMY INJURY RESPONSE DATA FOR SID-IIs**

Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan  
Test Program: FMVSS 214 MDB

NHTSA No. CA0206  
Test Date: 3/16/2010

Dummy S/N	Positive		Negative	
	MAX	TIME (ms)	MAX	TIME (ms)
HEAD ACCELERATION (G)				
Longitudinal (X)	12.5	65.2	-5.3	169.0
Lateral (Y)	49.8	64.6	-7.8	231.1
Vertical (Z)	5.0	56.0	-4.0	52.1
Resultant (R)	51.3	63.2		
HIC36 (t1, t2)	215.8		t1 = 54.4	t2 = 73.6
LOWER SPINE (g)				
Longitudinal (X)	3.2	79.1	-15.2	49.0
Lateral (Y)	45.9	57.8	-3.4	219.3
Vertical (Z)	4.0	68.3	-5.3	59.7
Resultant (R)	46.1	57.8		
PELVIS FORCE (N)				
Acetabular	2736.0	55.5	-67.0	235.6
Iliac	602.6	57.5	-63.3	153.0
Sum	3223.5	57.3	-81.7	153.0

Reference:

Positive Direction	-Longitudinal	(X) = forward
	-Lateral	(Y) = to right
	-Vertical	(Z) = down

**DATA SHEET NO. 15**  
**POST TEST OBSERVATIONS**

Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan  
Test Program: FMVSS 214 MDB

NHTSA No. CA0206  
Test Date: 3/16/2010

**TEST DUMMY INFORMATION AND CONTACT**

Description	Front Occupant	Rear Occupant
Dummy Type / Serial No.	ES-2re / 016	SID-IIs / 262
Head Contact	Curtain Airbag, Headliner, Headrest	Curtain Airbag, Headliner, Headrest, Rear Seat Backs
Upper Torso Contact	Side Airbag, Door Panel	Door Panel
Lower Torso Contact	Door Panel	Door Panel
Left Knee Contact	Door Panel	Door Panel
Right Knee Contact	Left Knee	Left Knee

**POST TEST DOOR OPENING AND SEAT TRACK INFORMATION**

Description	Front	Rear
Left Side Doors	Remained closed and jammed shut	Remained closed and jammed shut
Right Side Doors	Remained closed and operational	Remained closed and operational
Hatch and Other Doors	Remained closed and operational	Remained closed and operational
Seat Movement	0	0
Seat Back Failure	None	None

**POST-TEST STRUCTURAL OBSERVATIONS**

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No Separation
Sill Separation	None
Windshield Damage	None
Window Damage	None
Other Notable Effects	None

**SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION**

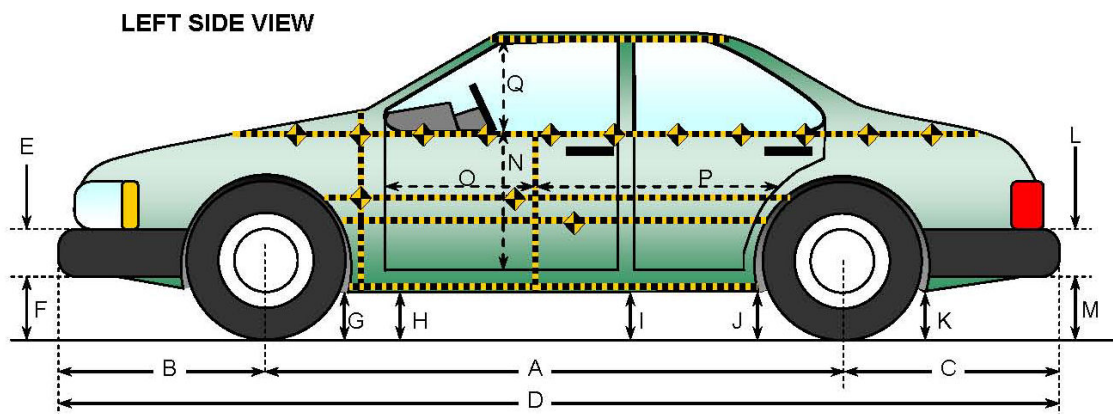
Restraint Type	Front Occupant		Rear Occupant	
	Installed	Operated	Installed	Operated
Frontal Airbag	Yes	No	No	
Side Torso Airbag	Yes	Yes	No	
Head Airbag	No		No	
Curtain Airbag	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes		No	

## DATA SHEET NO. 16

### VEHICLE PRE TEST AND POST TEST MEASUREMENTS

Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan  
 Test Program: FMVSS 214 MDB

NHTSA No. CA0206  
 Test Date: 3/16/2010

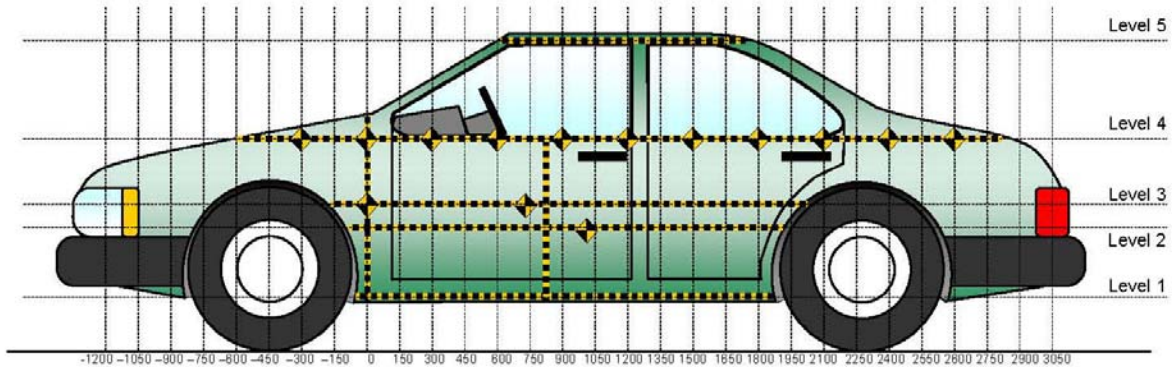


Code	Measurement Description	Pre-Test (mm)	Post-Test (mm)	Difference (mm)
A	Wheelbase	2872	2866	-6
B	Front Axle to FSOV	1034	1032	-2
C	Rear Axle to RSOV	1271	1265	-6
D	Total Vehicle Length at Centerline	5177	5163	-14
E	Front Bumper Thickness	150	150	0
F	Front Bumper Bottom to Ground	238	235	-3
G	Sill Height at Front Wheel Well	180	189	9
H	Sill Height at Front Door Leading Edge	184	189	5
I	Sill Height at B Pillar	197	183	-14
J1	Sill Height at Rear Wheel Well	204	199	-5
J2	Pinch Weld Height at Rear Wheel Well	197	191	-6
K	Sill Height Aft of Rear Wheel Well	226	232	6
L	Rear Bumper Thickness	160	160	0
M	Rear Bumper Bottom to Ground	340	350	10
N	Sill Height to Window Bottom Sill	772	711	-61
O	Front Door Leading Edge to Impact CL	818	794	-24
P	Rear Door Trailing Edge to Impact CL	1237	1185	-52
Q	Front Window Opening	382	370	-12
R	Right Side Length	3965	3967	2
S	Left Side Length	3965	3954	-11
T	Vehicle Width at B Post	1933	1811	-122

**DATA SHEET NO. 17**  
**EXTERIOR CRUSH MEASUREMENTS**

Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan  
 Test Program: FMVSS 214 MDB

NHTSA No. CA0206  
 Test Date: 3/16/2010



**LEFT SIDE VIEW**

**Maximum Exterior Crush Measurements**

Level	Measurement Description	Maximum Exterior Static Crush	Distance from Impact	Height Above Ground
1	Sill Top	118	1650	325
2	Occupant H-Point	187	900	563
3	Mid-Door	178	600	670
4	Window Sill	80	1200	1015
5	Window Top	17	1350	1415

# DATA SHEET NO. 18

## VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan

NHTSA No. CA0206

Test Program: FMVSS 214 MDB

Test Date: 3/16/2010

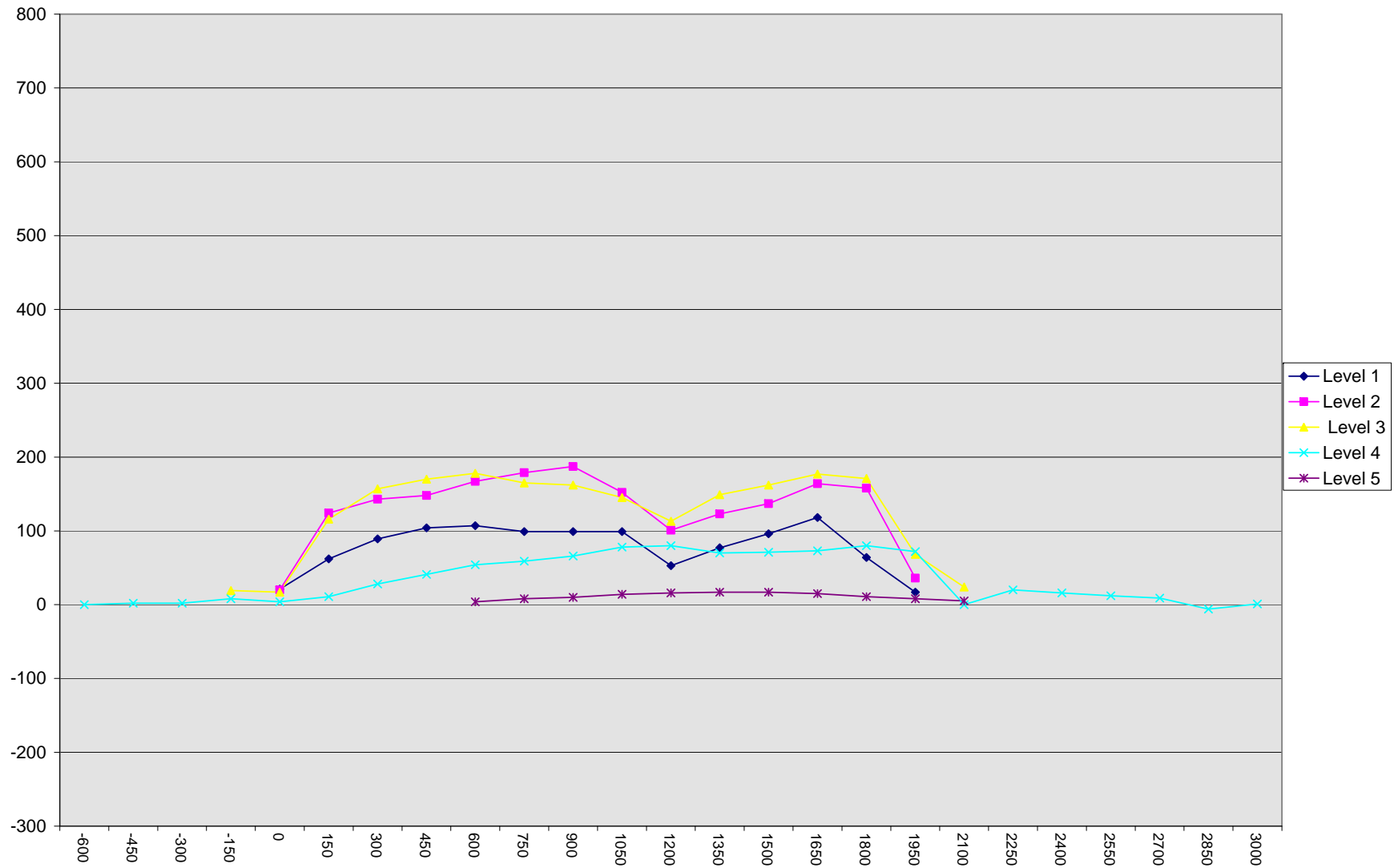
	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush (mm)	118	187	178	80	17
Distance From Impact (mm)	1650	900	600	1200	1350

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-600				287					287					0	
-450				272					274					2	
-300				260					262					2	
-150			143	247				162	255				19	8	
0	153	148	157	235		174	168	174	239		21	20	17	4	
150	153	156	161	228		215	280	277	239		62	124	116	11	
300	151	157	161	222		240	300	318	250		89	143	157	28	
450	148	156	158	216		252	304	328	257		104	148	170	41	
600	146	155	157	209	443	253	322	335	263	447	107	167	178	54	4
750	145	154	156	206	440	244	333	321	265	448	99	179	165	59	8
900	144	153	155	202	448	243	340	317	268	458	99	187	162	66	10
1050	145	153	153	199	451	244	305	298	277	465	99	152	145	78	14
1200	145	153	154	197	456	198	254	267	277	472	53	101	113	80	16
1350	146	154	155	198	458	223	277	304	268	475	77	123	149	70	17
1500	148	156	156	198	459	244	293	318	269	476	96	137	162	71	17
1650	153	157	157	200	462	271	321	334	273	477	118	164	177	73	15
1800	158	156	157	201	464	222	314	328	281	475	64	158	171	80	11
1950	162	148	153	205	475	179	184	221	277	483	17	36	68	72	8
2100			139	209	490			163	209	495			24	0	5
2250				216					236					20	
2400				222					238					16	
2550				229					241					12	
2700				239					248					9	
2850				253					247					-6	
3000				272					273					1	

**DATA SHEET NO. 18 (CONTINUED)**  
**VEHICLE EXTERIOR CRUSH PROFILES**

Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan  
Test Program: FMVSS 214 MDB

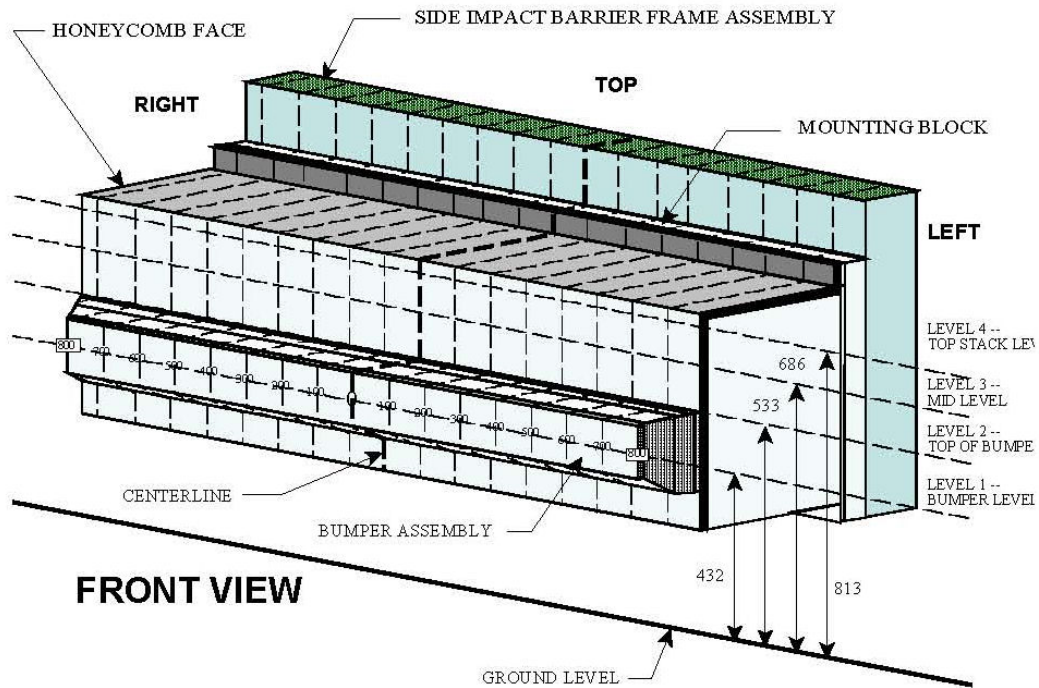
NHTSA No. CA0206  
Test Date: 3/16/2010



**DATA SHEET NO. 19**  
**EXTERIOR STATIC CRUSH FOR IMPACTOR FACE**

Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan  
 Test Program: FMVSS 214 MDB

NHTSA No. CA0206  
 Test Date: 3/16/2010



All Dimensions in mm

Stack Level	Distance Right of Center								C <sub>L</sub>	Distance Left of Center							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
1	159	145	140	132	127	127	124	121	122	118	112	111	110	110	119	138	164
2	105	106	94	97	96	95	77	80	65	63	65	77	83	78	78	92	106
3	14	3	5	7	10	13	22	38	26	16	13	13	16	19	23	37	81
4	8	-7	-7	-5	3	16	40	53	28	20	18	17	17	26	40	54	96

Reference: + X = Forward  
 + Y = To Right  
 + Z = Down

**DATA SHEET NO. 20**  
**SUMMARY OF FMVSS 301 FUEL SYSTEM DATA**

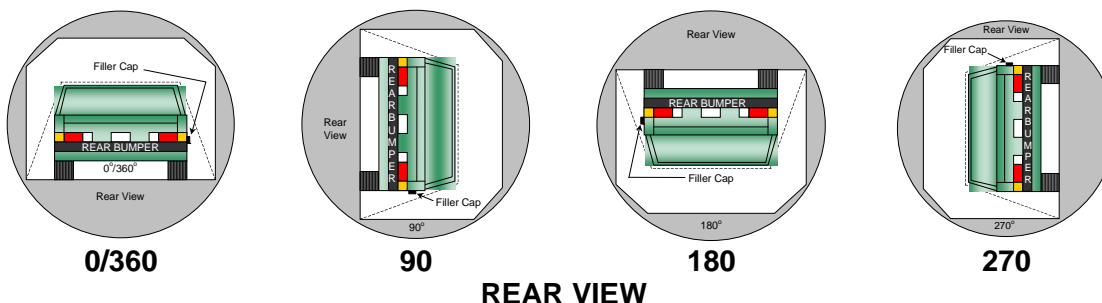
Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan  
 Test Program: FMVSS 214 MDB

NHTSA No. CA0206  
 Test Date: 3/16/2010

**FUEL SYSTEM INTEGRITY POST IMPACT DATA**

Time Interval	FMVSS 301 Maximum Allowable Spillage	Spillage (g)
Impact Until Motion Ceases	28 g	0
First Five Minutes Following Impact	142 g	0
Next 25 Minutes	28 g / 1 minute	0

**STATIC ROLLOVER DATA**



Rollover Stage	Rotation Time (spec. 1-3 min)				FMVSS 301 Hold Time		Total Time				Next Whole Minute Interval	
0° - 90°	1	minutes	50	seconds	5	minutes	6	minutes	50	seconds	7	minutes
90° - 180°	1	minutes	50	seconds	5	minutes	6	minutes	50	seconds	7	minutes
180° - 270°	1	minutes	46	seconds	5	minutes	6	minutes	46	seconds	7	minutes
270° - 360°	1	minutes	55	seconds	5	minutes	6	minutes	55	seconds	7	minutes

Rollover Stage	Spillage (g)			
	First 5 min. from onset of rotation	6 <sup>th</sup> min.	7 <sup>th</sup> min.	8 <sup>th</sup> min. (if required)
0° - 90°	0	0	0	0
90° - 180°	0	0	0	0
180° - 270°	0	0	0	0
270° - 360°	0	0	0	0
FMVSS 301 Maximum Allowable (for each 90° stage)	142	28	28	28

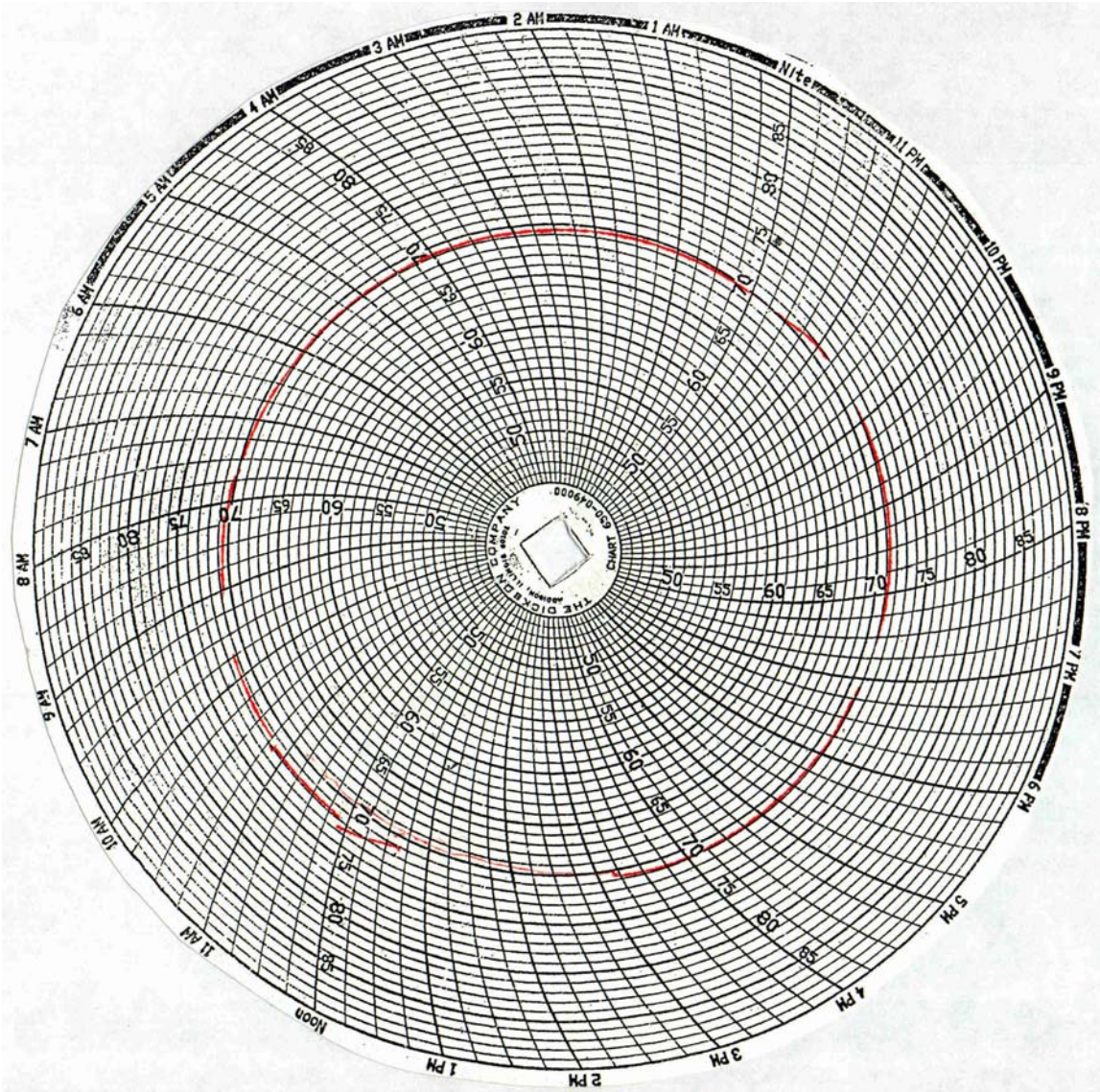
Rollover Stage	Spillage Location(s)
0° to 90°	None
90° to 180°	None
180° to 270°	None
270° to 360°	None



**DATA SHEET NO. 21**  
**TEMPERATURE AND HUMIDITY TRACE**

Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan  
Test Program: FMVSS 214 MDB

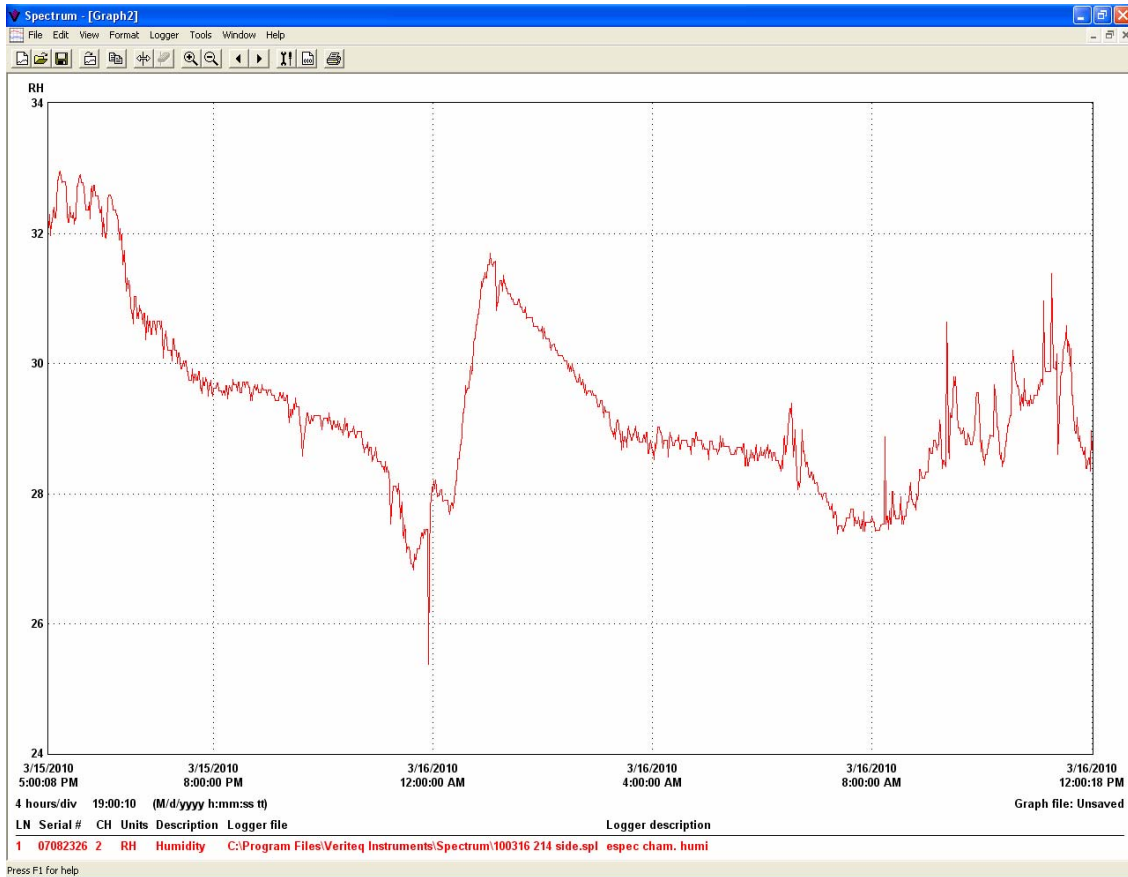
NHTSA No. CA0206  
Test Date: 3/16/2010



# **DATA SHEET NO. 21 (CONTINUED)** **TEMPERATURE AND HUMIDITY TRACE**

Test Vehicle: 2010 Ford Taurus SE 4-Dr Sedan  
 Test Program: FMVSS 214 MDB

NHTSA No. CA0206  
 Test Date: 3/16/2010



**APPENDIX A**  
**PHOTOGRAPHS**

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Pre-Test Front View of Test Vehicle



Post-Test Front View of Test Vehicle





Pre-Test Rear View of Test Vehicle



Post-Test Rear View of Test Vehicle





Pre-Test Impacted Side View of Test Vehicle



Post-Test Impacted Side View of Test Vehicle





Pre-Test Front View of Deformable Barrier



Post-Test Front View of Deformable Barrier





Pre-Test Left Side View of Deformable Barrier



Post-Test Left Side View of Deformable Barrier





Pre-Test Right Side View of Deformable Barrier



Post-Test Right Side View of Deformable Barrier





Pre-Test Top View of Deformable Barrier



Post-Test Top View of Deformable Barrier





Pre-Test Overhead View of MDB at Impact Location



Post-Test Overhead View of MDB and Target Vehicle





Pre-Test Right Side View of Driver SID



Post-Test Right Side View Driver SID





Pre-Test Right Side View of Passenger SID



Post-Test Right Side View of Passenger SID





Pre-Test Interior of Front Door



Post-Test Interior of Front Door Showing SID Impact Locations

PHOTO NOT AVAILABLE

Pre-Test Interior of Rear Door



Post-Test Interior of Rear Door Showing SID Impact Locations





Pre-Test Left Side View of MDB with Deformable Barrier in Position

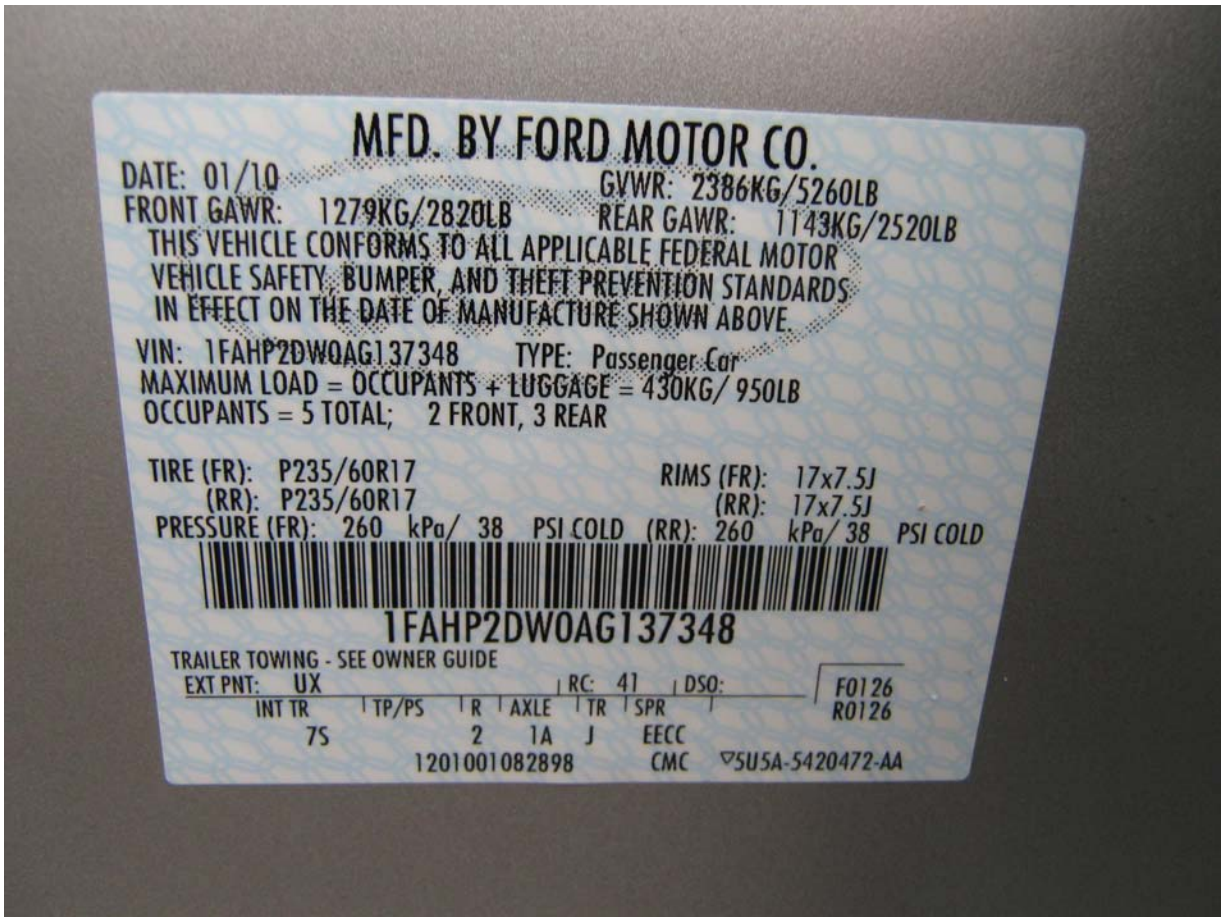


Pre-Test Right Side View of MDB with Deformable Barrier in Position





Post-Test Left Side Impact Close-up

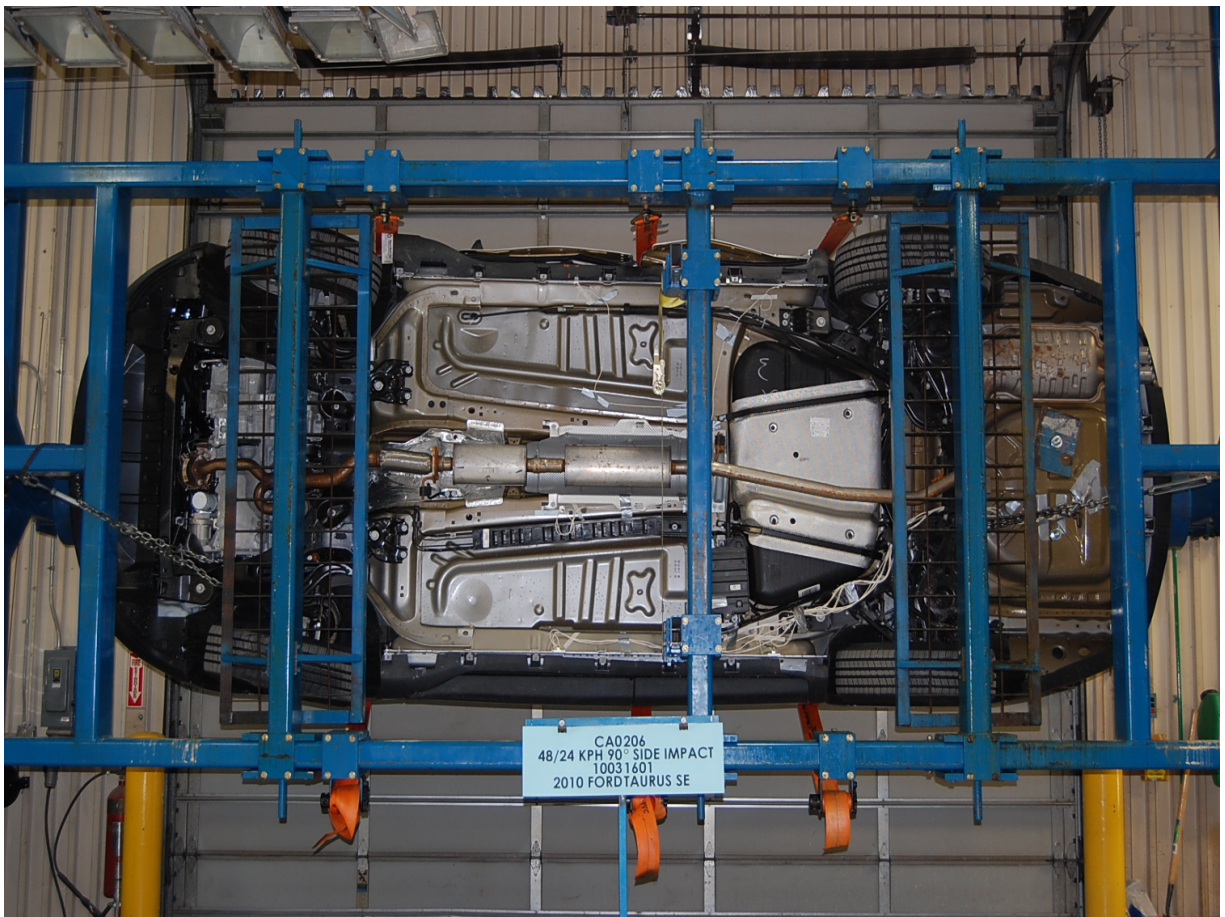


Manufacturer's Label



Tire Placard





Vehicle on Rollover Device (90 Degrees)



Vehicle on Rollover Device (180 Degrees)





Vehicle on Rollover Device (270 Degrees)



Vehicle on Rollover Device (360 Degrees)

## **APPENDIX B**

### **ES-2re DUMMY RESPONSE DATA**

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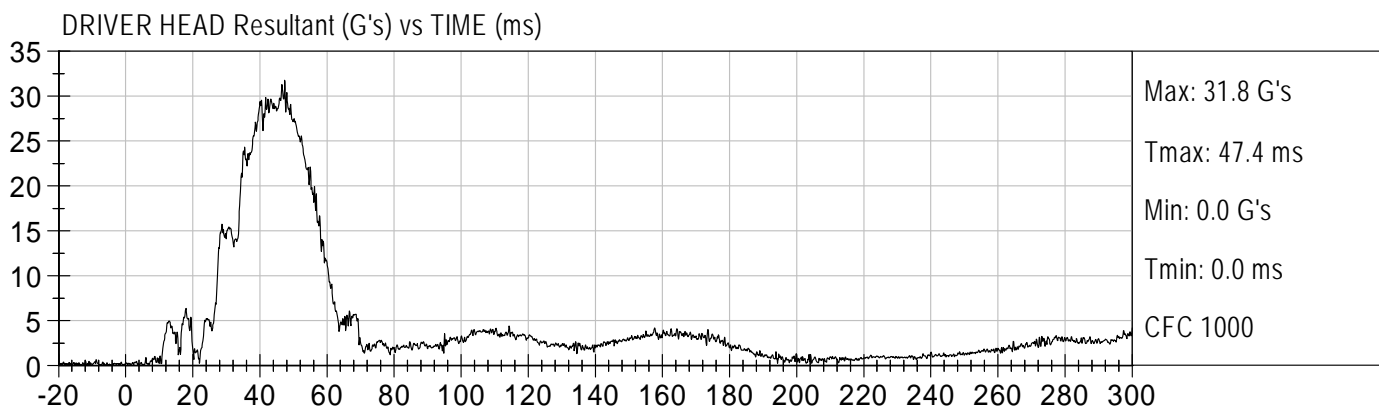
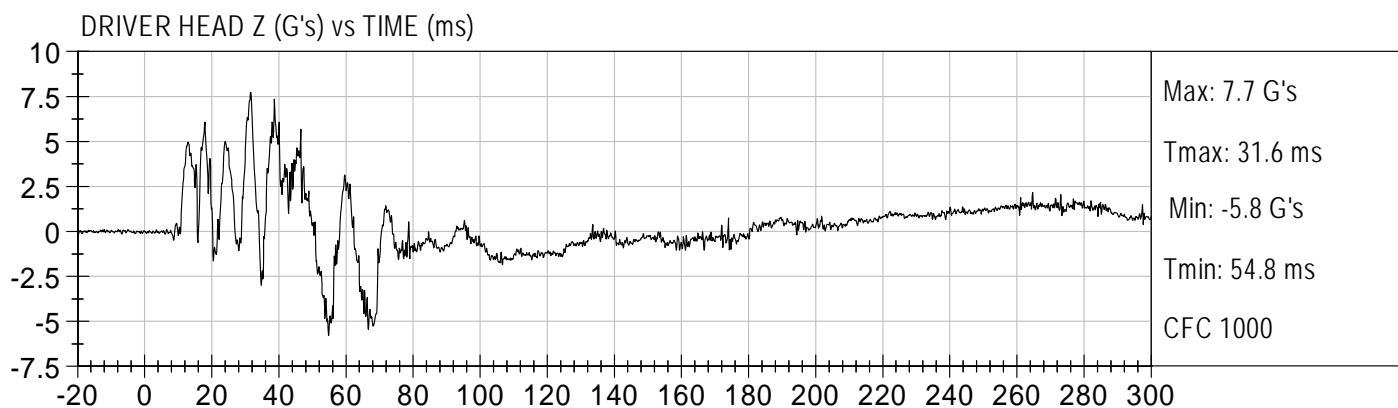
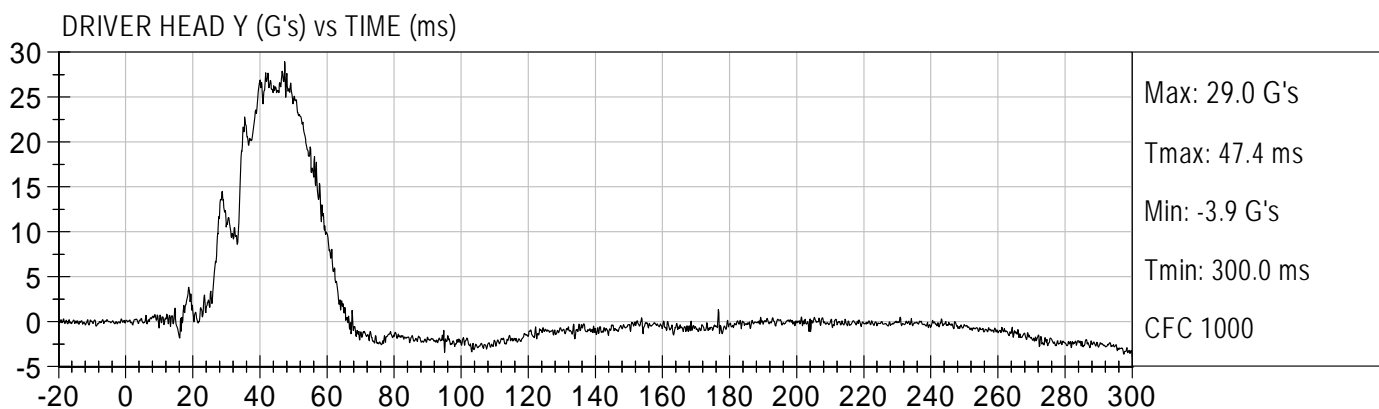
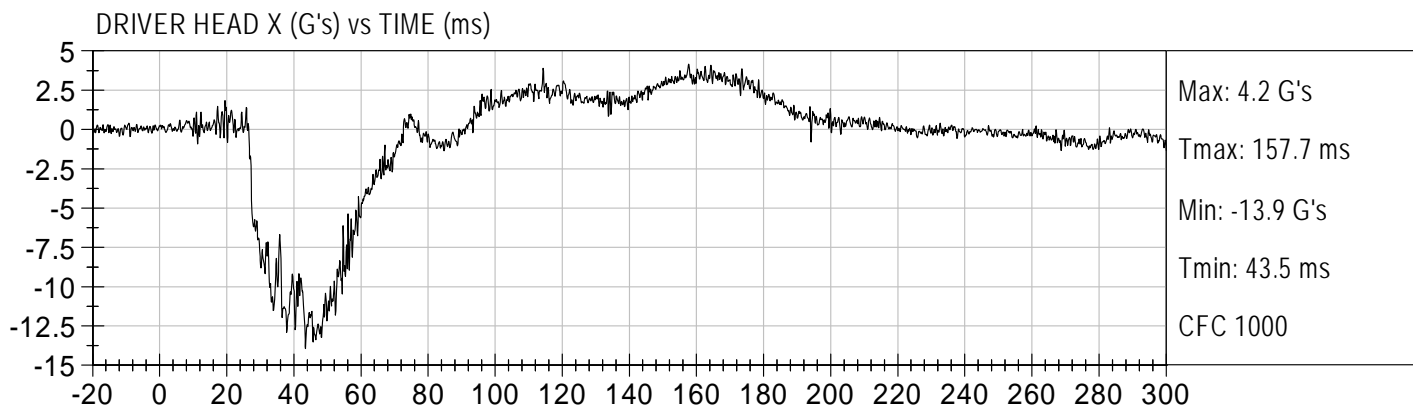
### Dummy Instrumentation Plots FILTERED DATA

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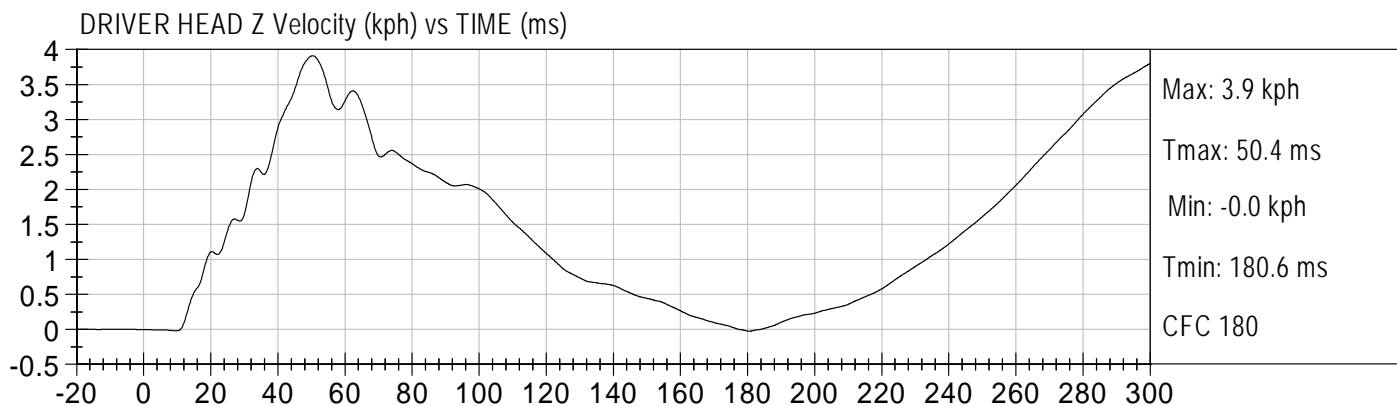
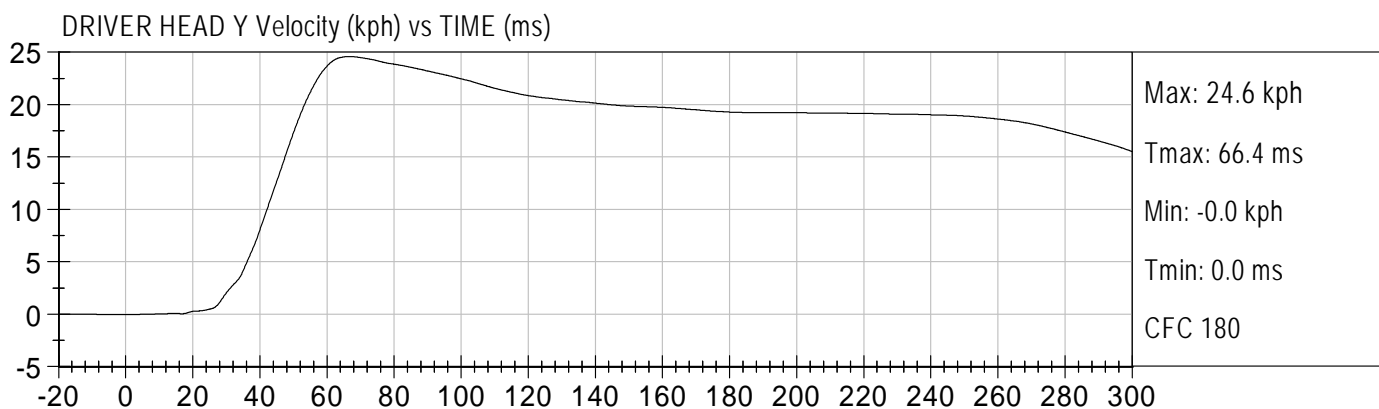
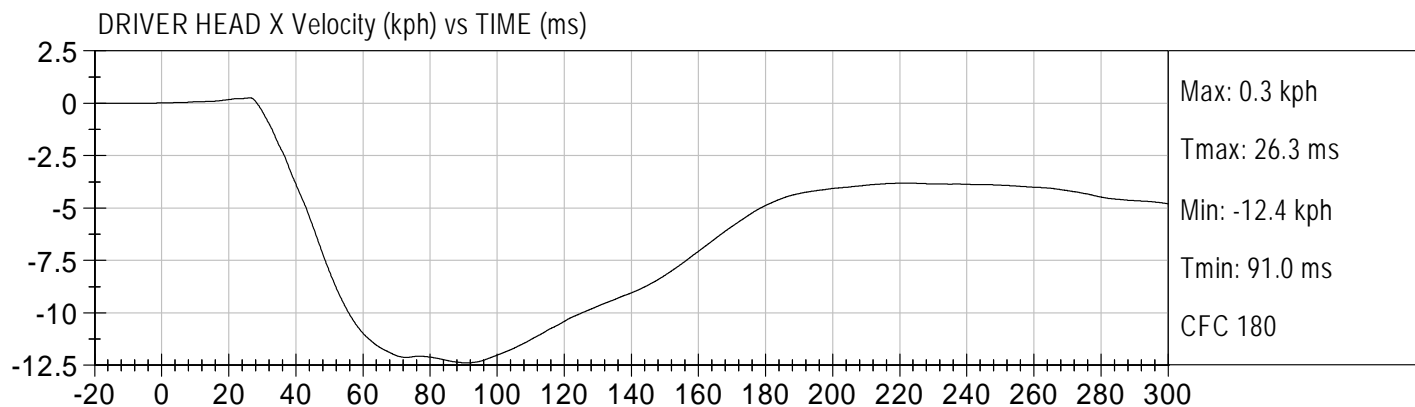


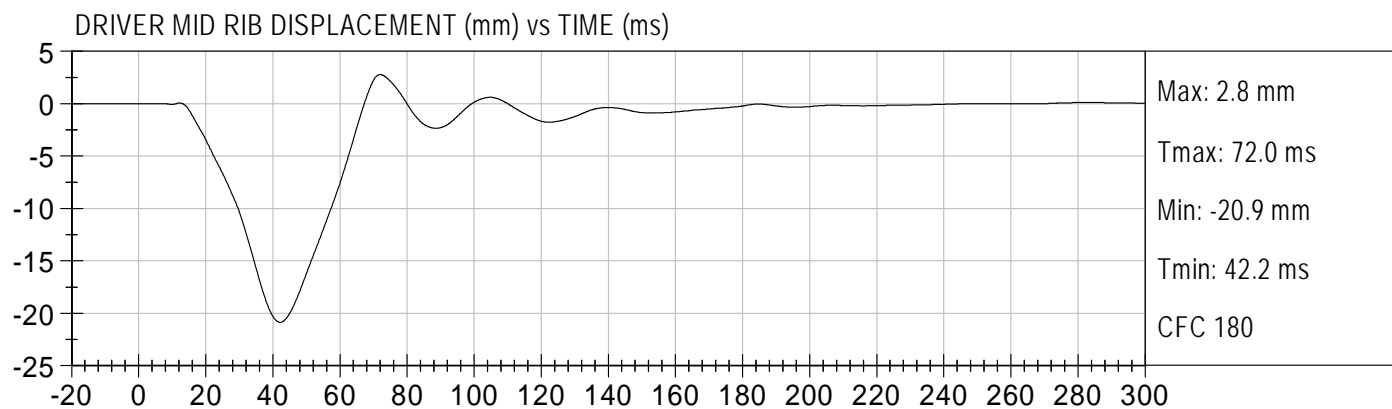
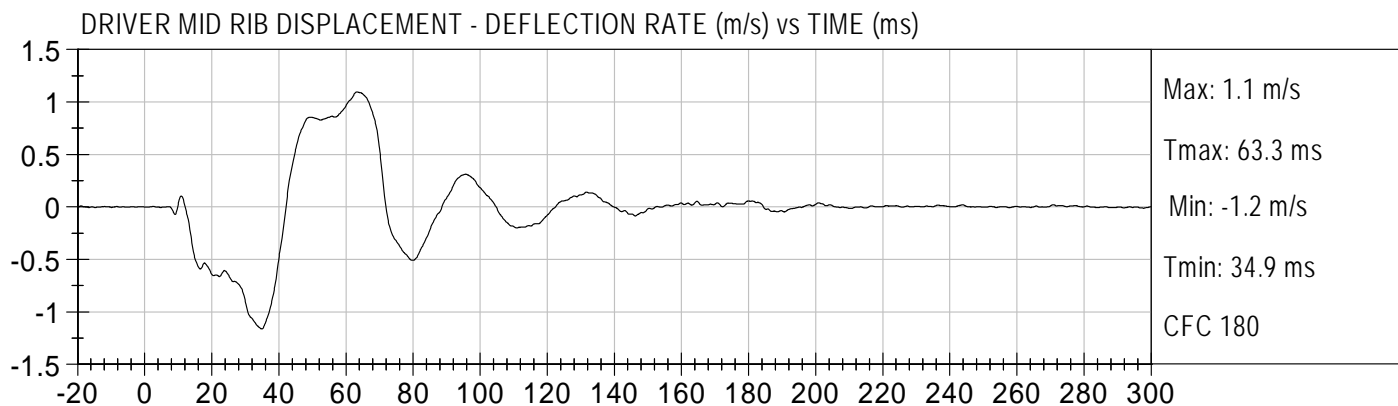
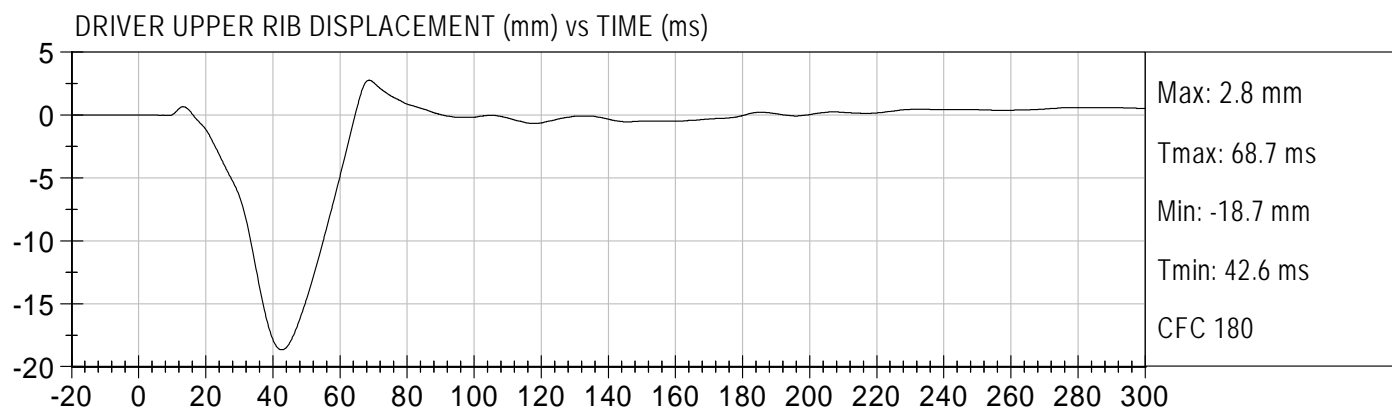
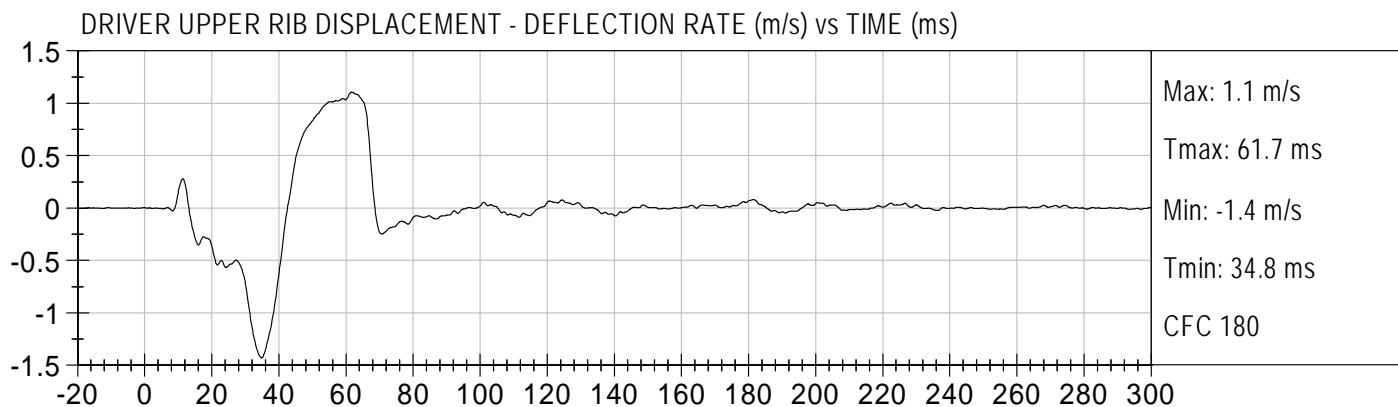
48/24 90° Side Impact  
2010 Ford Taurus SE - CA0206

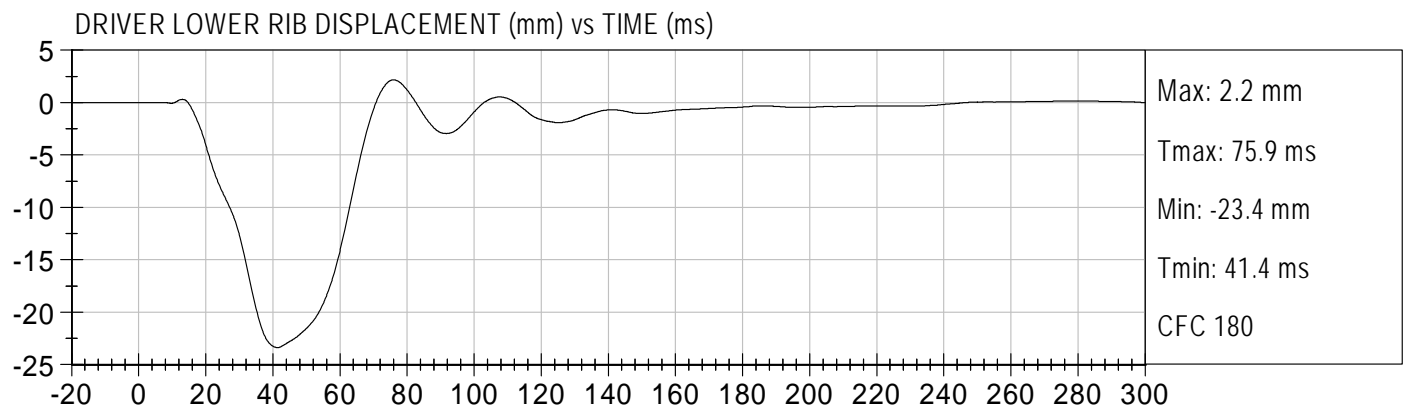
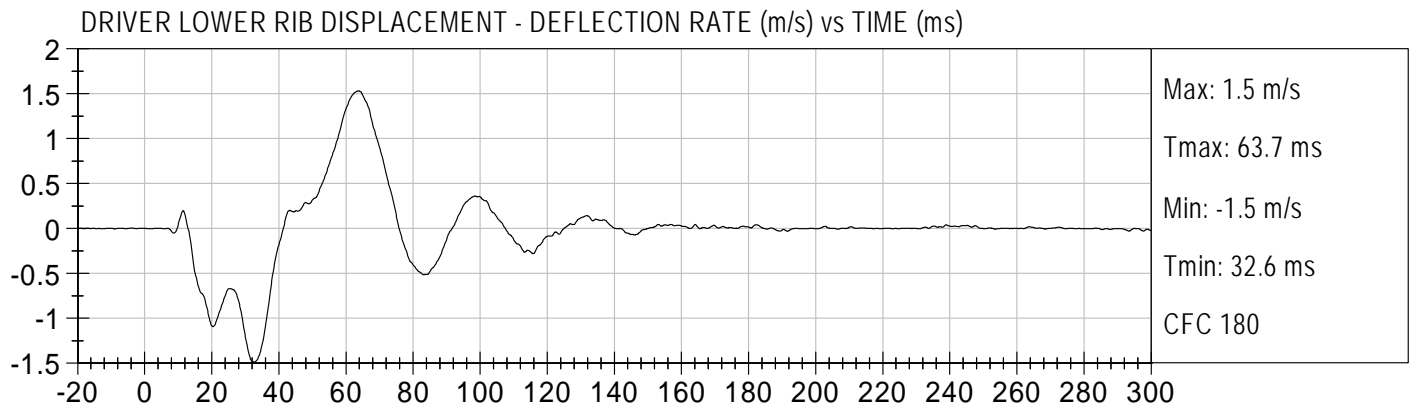
Test Date: 03/16/2010  
Speed: 32.8 mph (52.8 km/h)





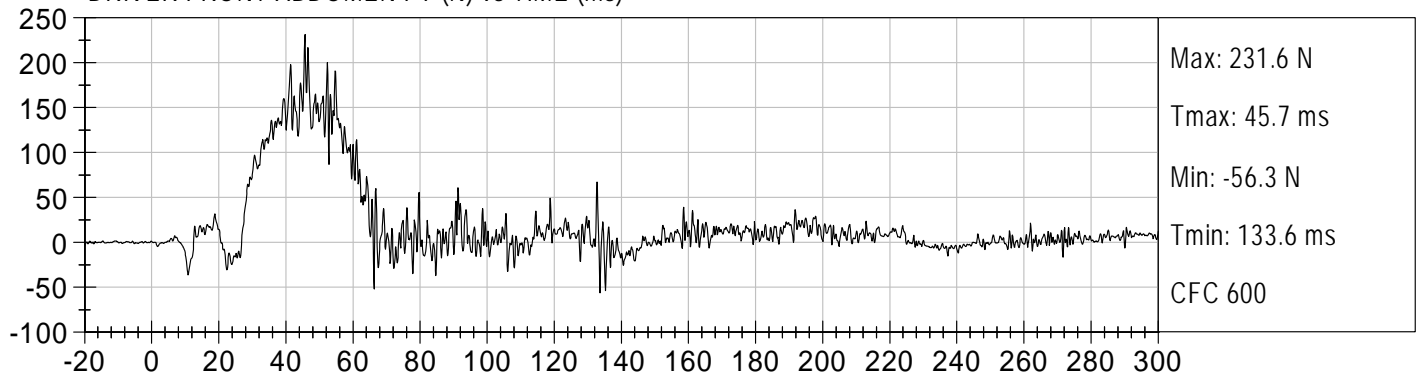




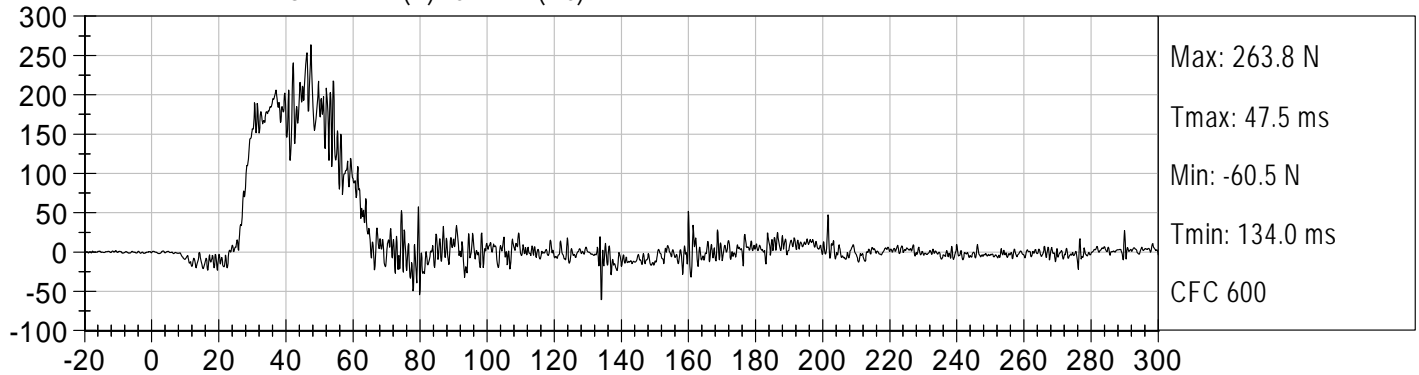




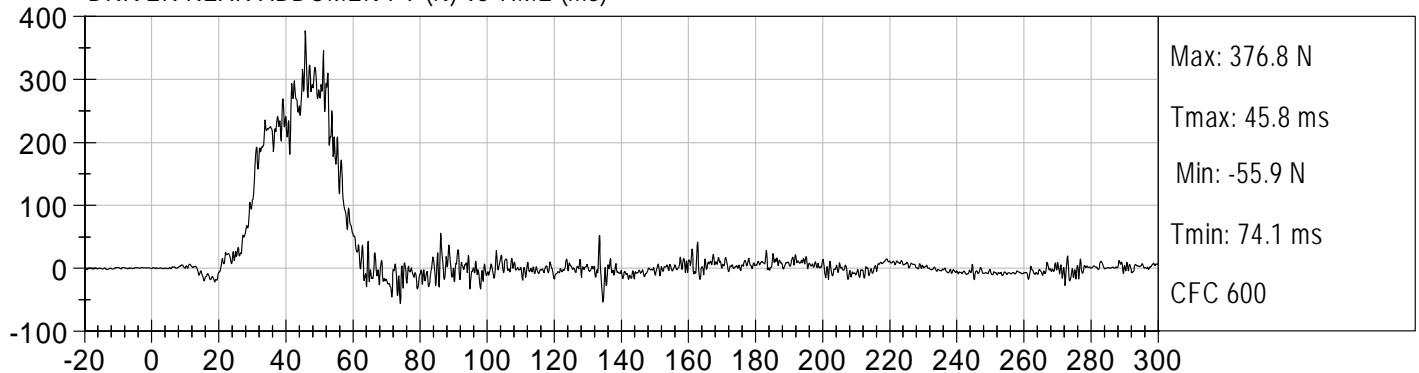
DRIVER FRONT ABDOMEN FY (N) vs TIME (ms)



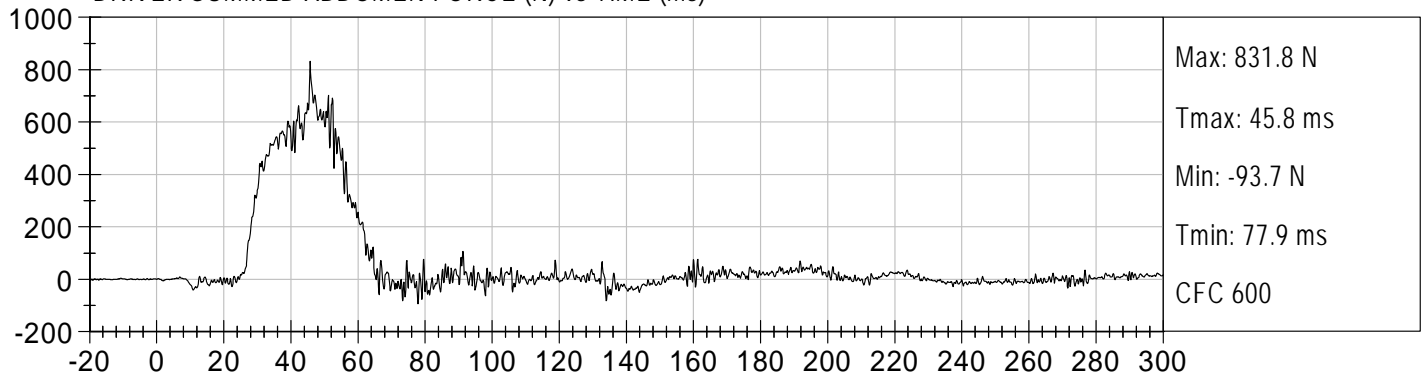
DRIVER MID ABDOMEN FY (N) vs TIME (ms)



DRIVER REAR ABDOMEN FY (N) vs TIME (ms)



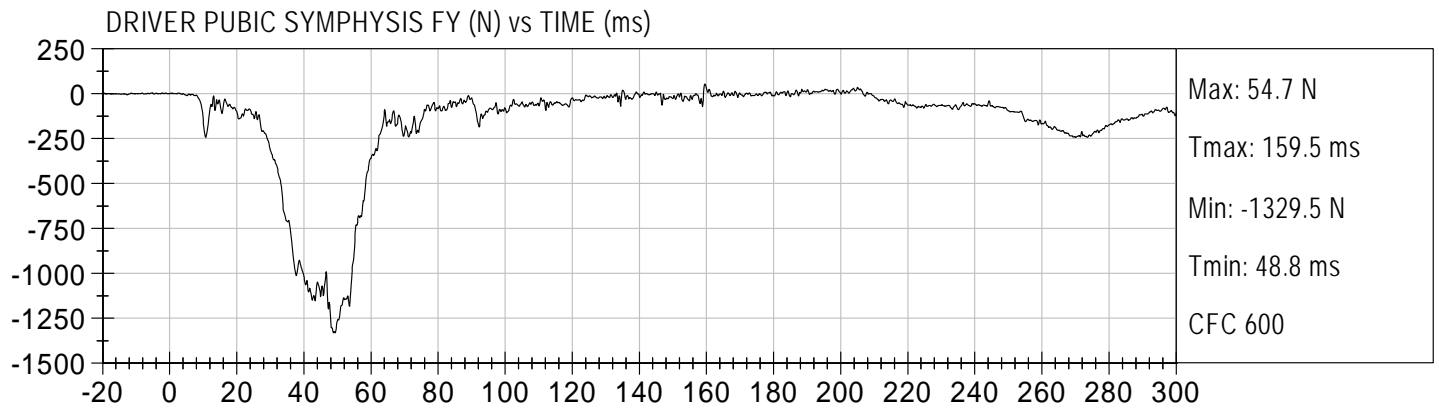
DRIVER SUMMED ABDOMEN FORCE (N) vs TIME (ms)





48/24 90° Side Impact  
2010 Ford Taurus SE - CA0206

Test Date: 03/16/2010  
Speed: 32.8 mph (52.8 km/h)



## **APPENDIX C**

### **SID-IIs DUMMY RESPONSE DATA**

## TABLE OF DATA PLOTS

### Dummy Instrumentation Plots FILTERED DATA

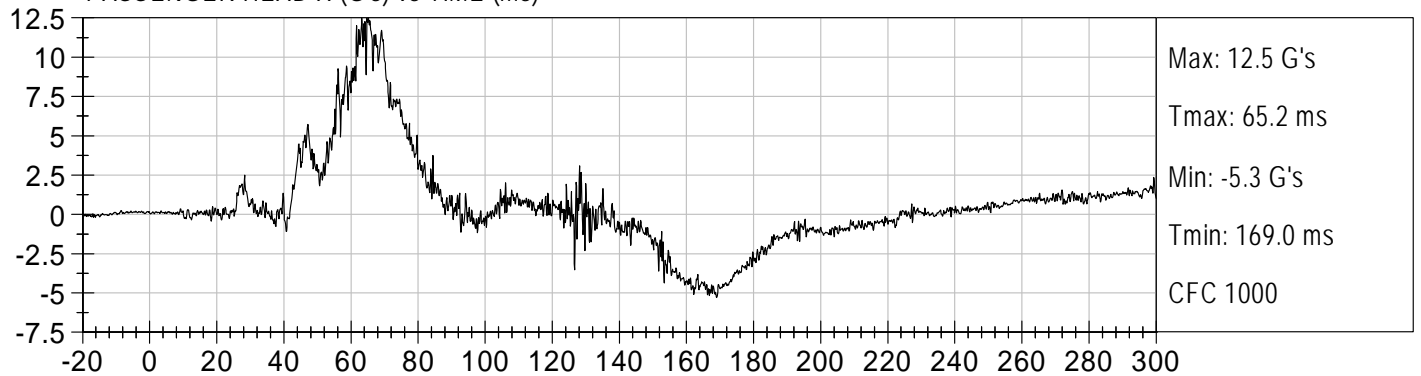
<b><u>No.</u></b>	<b><u>Description</u></b>	<b><u>Page No.</u></b>
Figure No. 1.	SID-IIs Head (X) Acceleration vs. Time	C-1
Figure No. 2.	SID-IIs Head (Y) Acceleration vs. Time	C-1
Figure No. 3.	SID-IIs Head (Z) Acceleration vs. Time	C-1
Figure No. 4.	SID-IIs Head Resultant Acceleration vs. Time	C-1
Figure No. 5.	SID-IIs Head (X) Velocity vs. Time	C-2
Figure No. 6.	SID-IIs Head (Y) Velocity vs. Time	C-2
Figure No. 7.	SID-IIs Head (Z) Velocity vs. Time	C-2
Figure No. 8.	SID-IIs Lower Spine (X) Acceleration vs. Time	C-3
Figure No. 9.	SID-IIs Lower Spine (Y) Acceleration vs. Time	C-3
Figure No. 10.	SID-IIs Lower Spine (Z) Acceleration vs. Time	C-3
Figure No. 11.	SID-IIs Lower Spine Resultant Acceleration vs. Time	C-3
Figure No. 12.	SID-IIs Lower Spine (X) Velocity vs. Time	C-4
Figure No. 13.	SID-IIs Lower Spine (Y) Velocity vs. Time	C-4
Figure No. 14.	SID-IIs Lower Spine (Z) Velocity vs. Time	C-4
Figure No. 15.	SID-IIs Acetabulum Force vs. Time	C-5
Figure No. 16.	SID-IIs Illiac Force vs. Time	C-5
Figure No. 17.	SID-IIs Sum of Illiac and Acetabulum Forces vs. Time	C-5



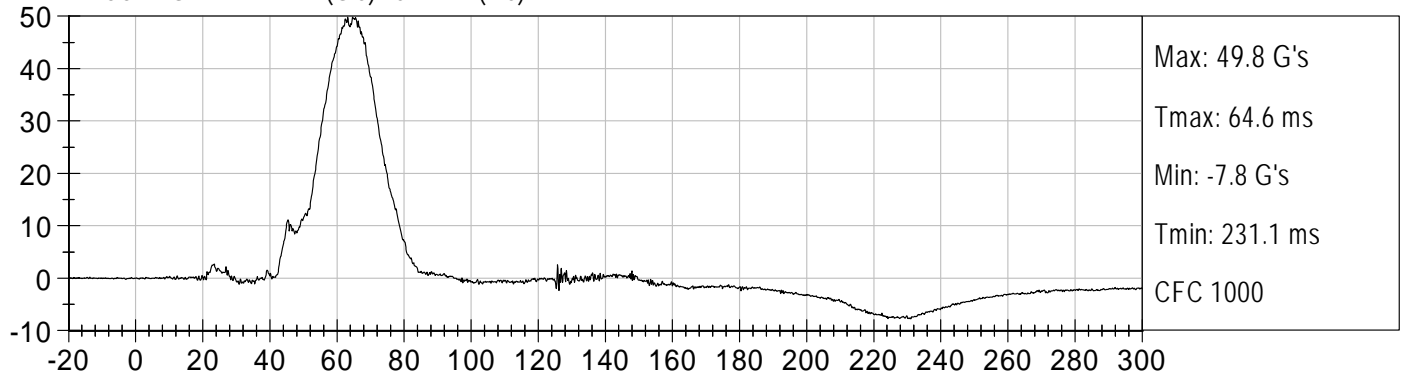
48/24 90° Side Impact  
2010 Ford Taurus SE - CA0206

Test Date: 03/16/2010  
Speed: 32.8 mph (52.8 km/h)

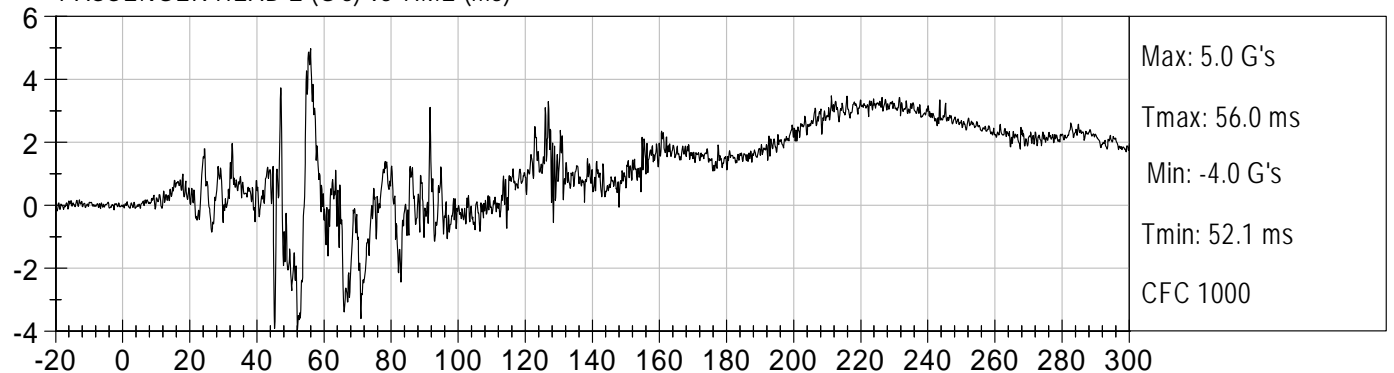
PASSENGER HEAD X (G's) vs TIME (ms)



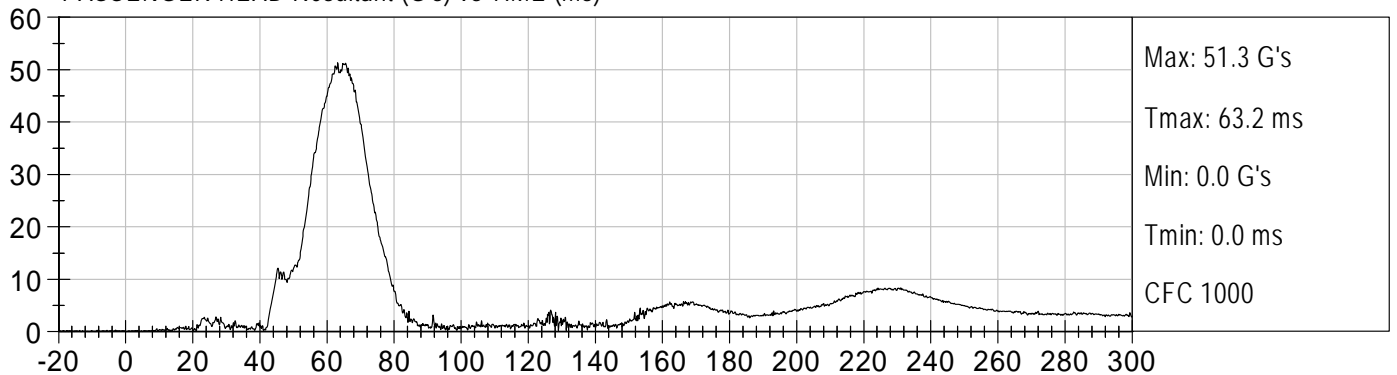
PASSENGER HEAD Y (G's) vs TIME (ms)



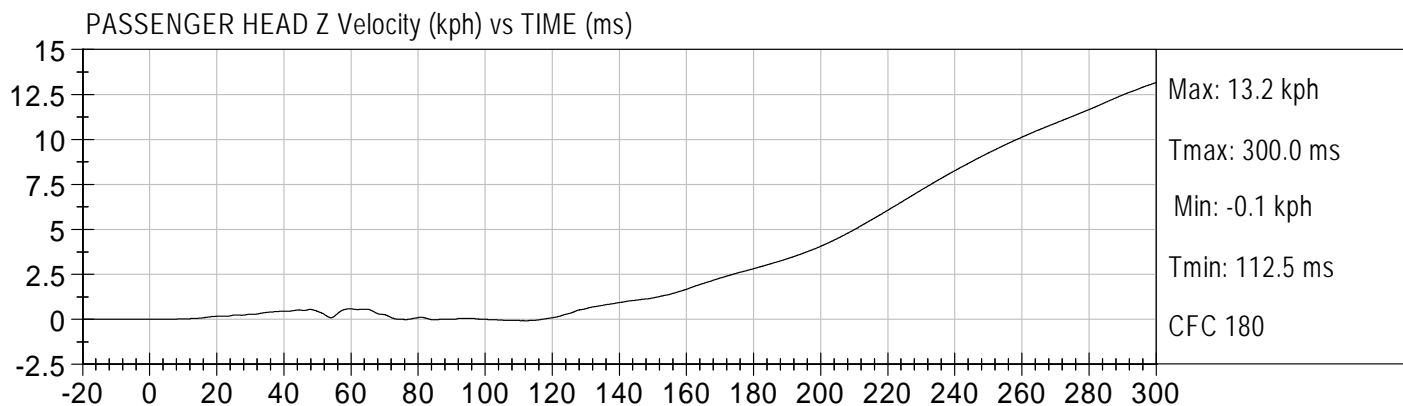
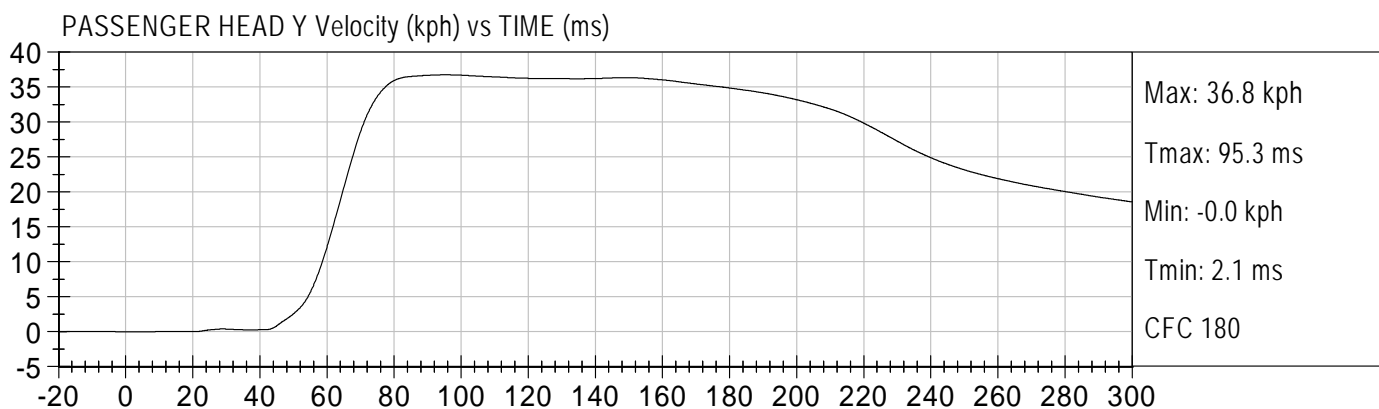
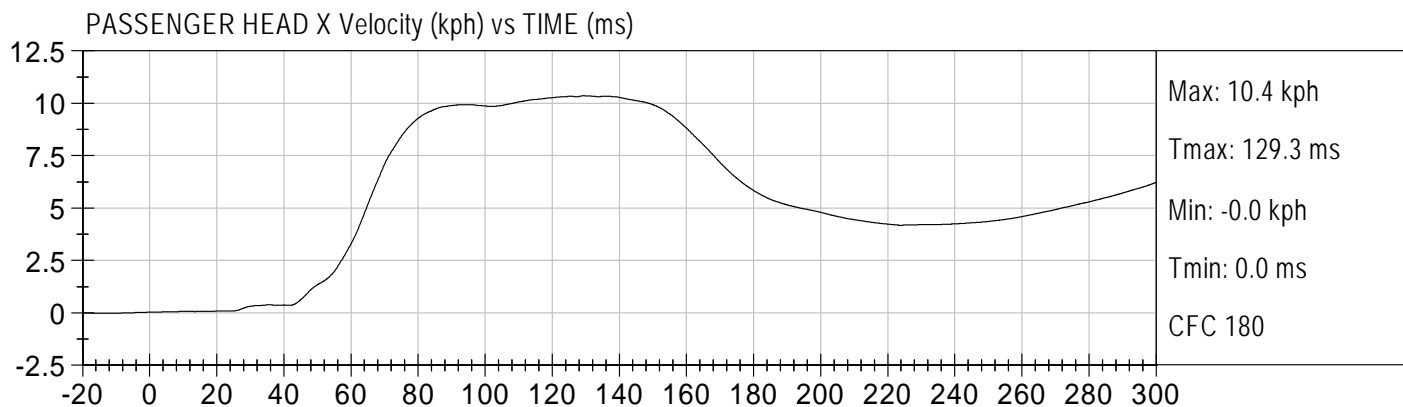
PASSENGER HEAD Z (G's) vs TIME (ms)

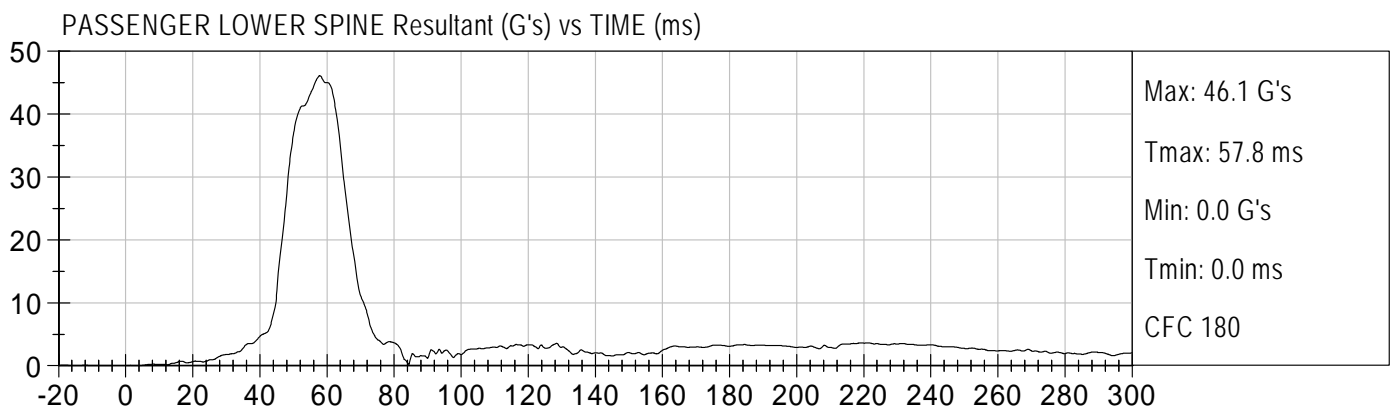
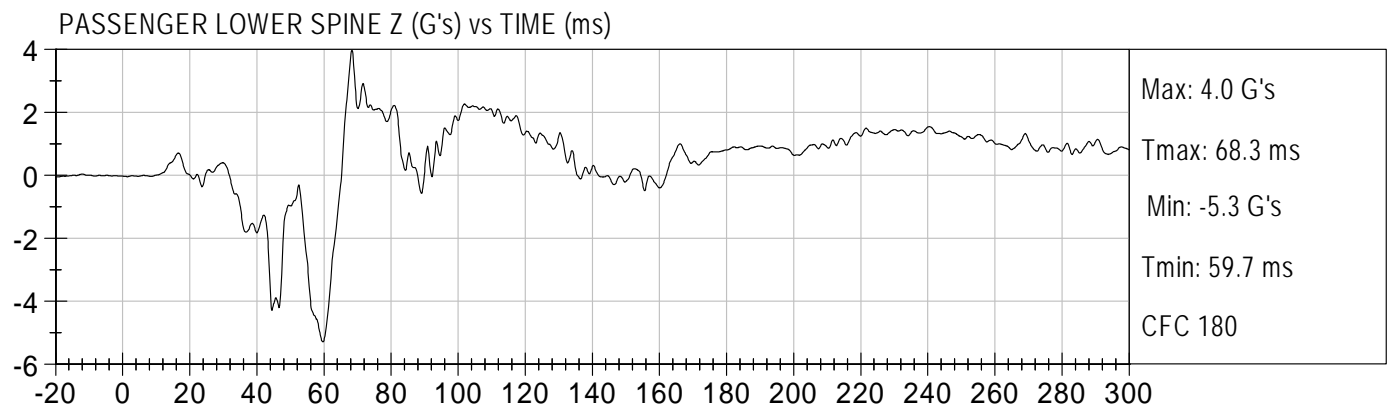
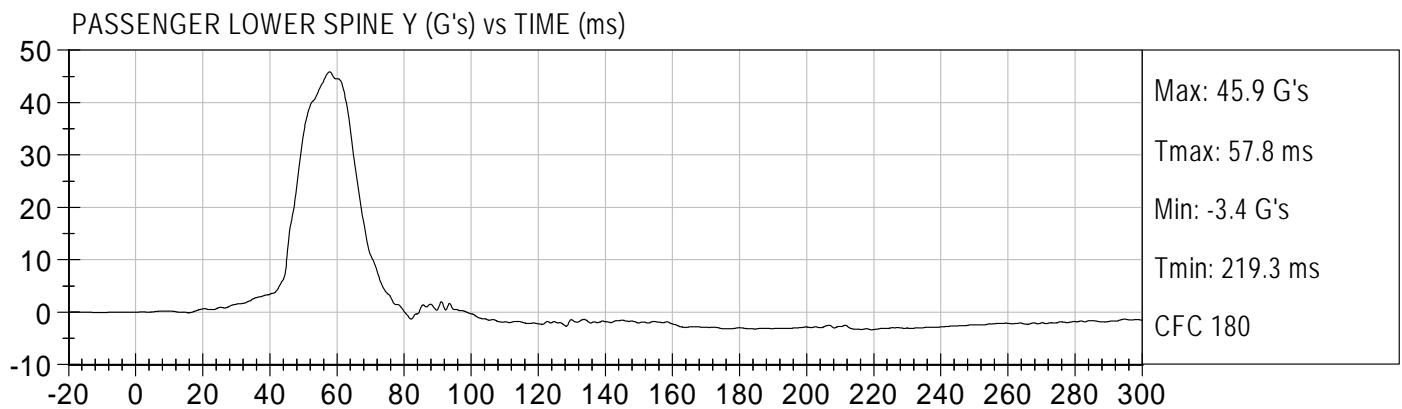
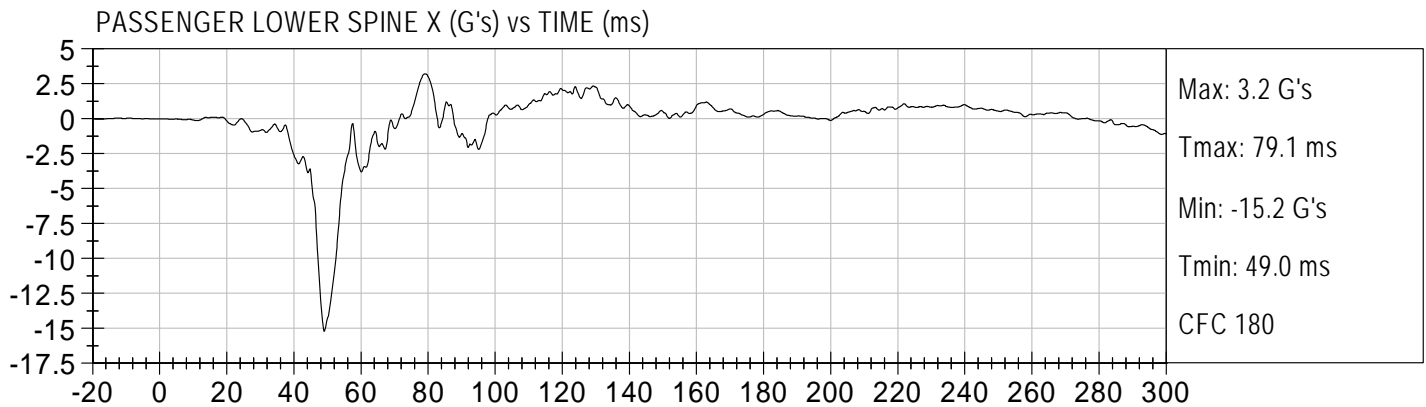


PASSENGER HEAD Resultant (G's) vs TIME (ms)



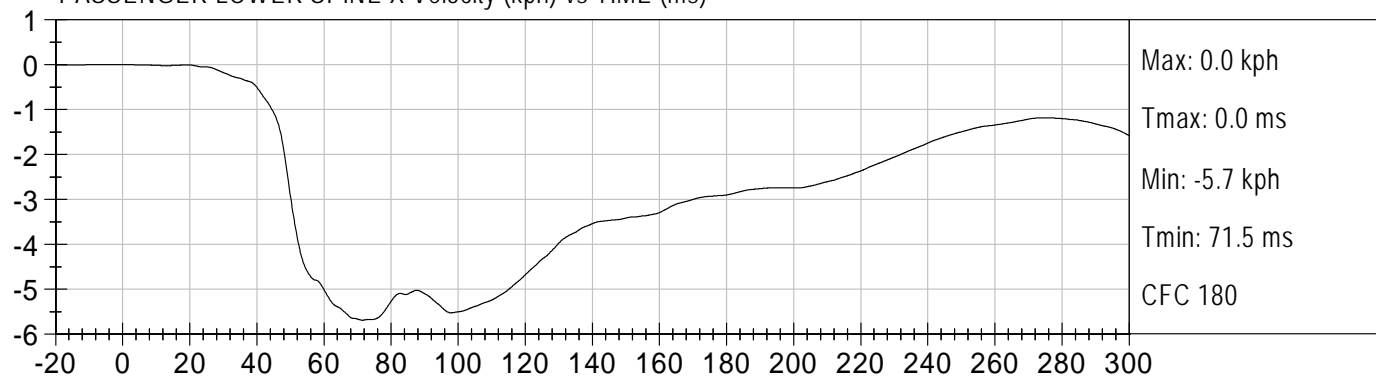




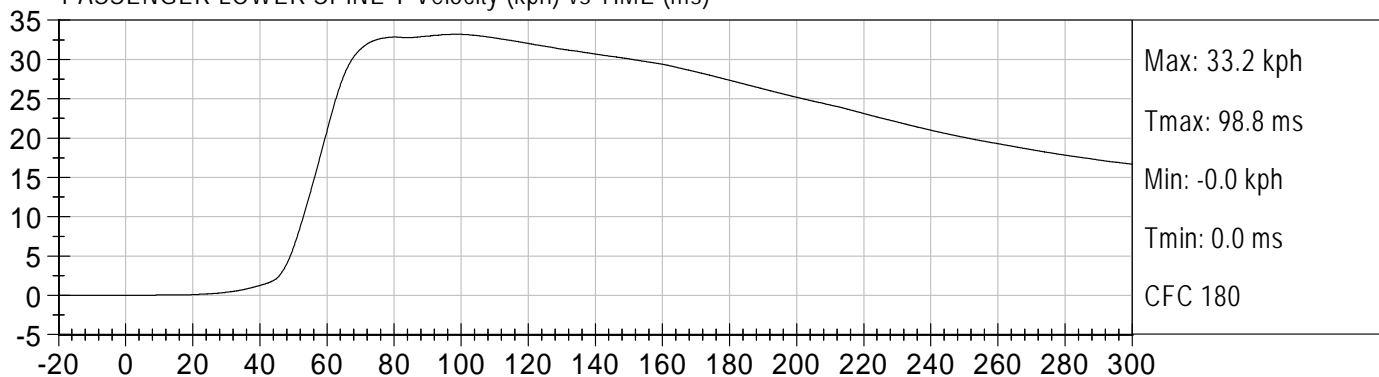




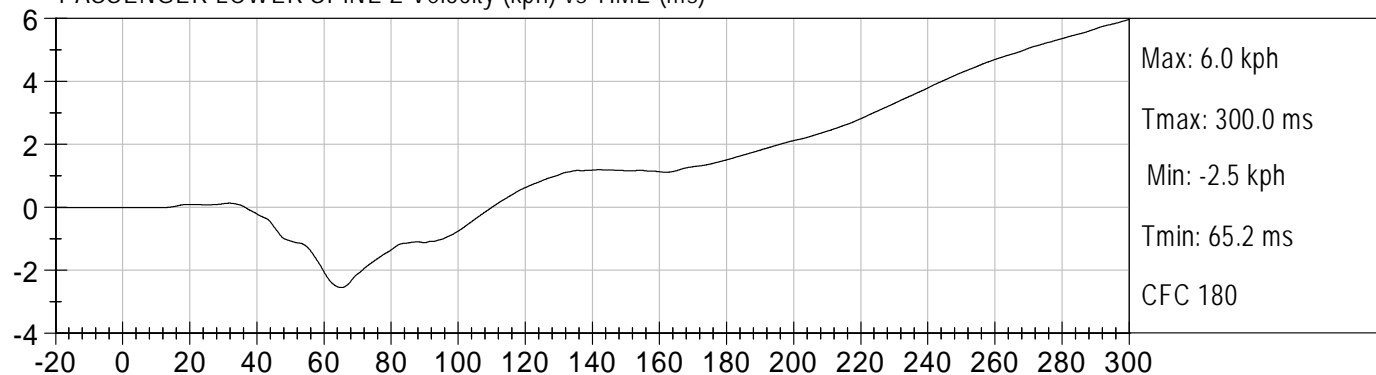
PASSENGER LOWER SPINE X Velocity (kph) vs TIME (ms)

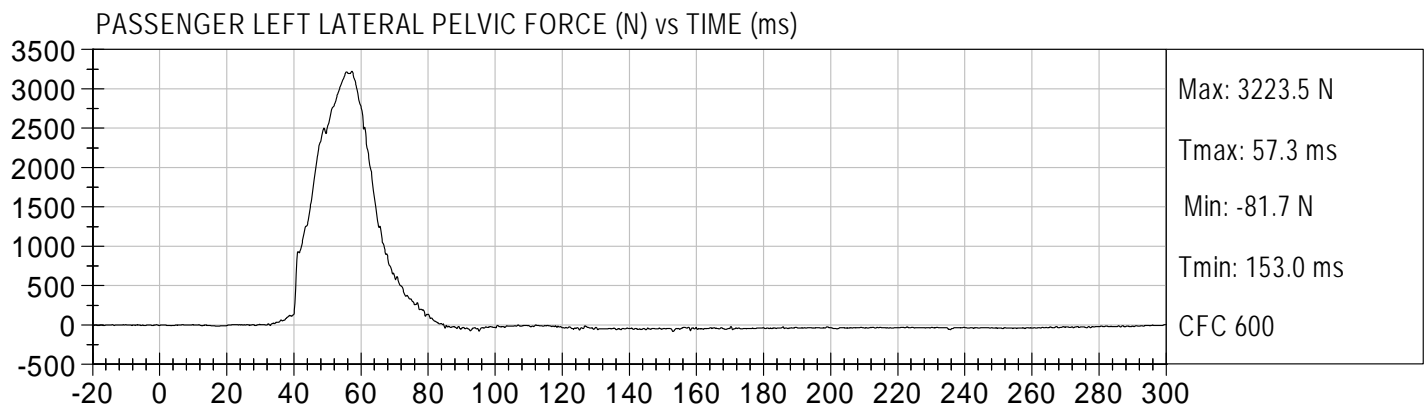
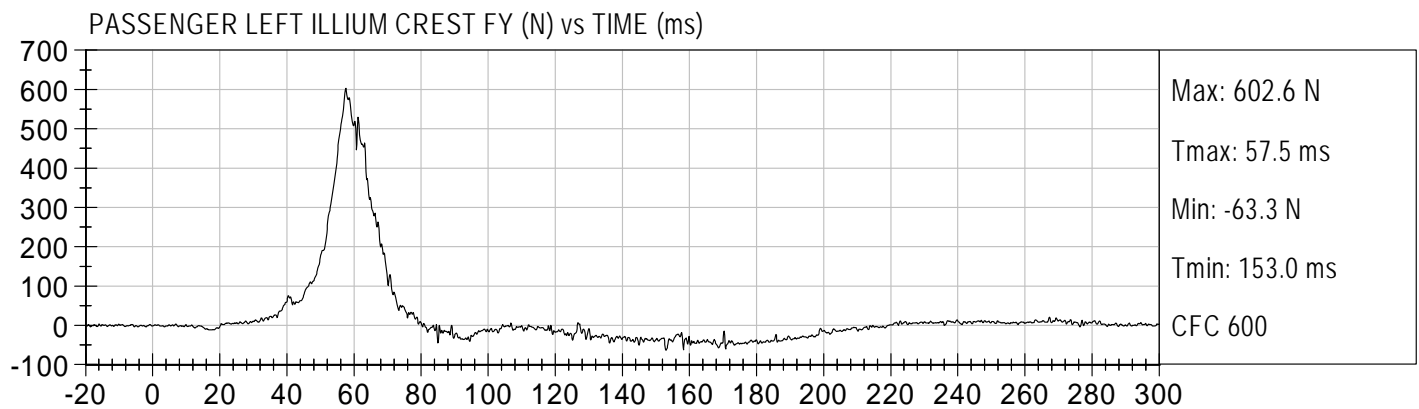
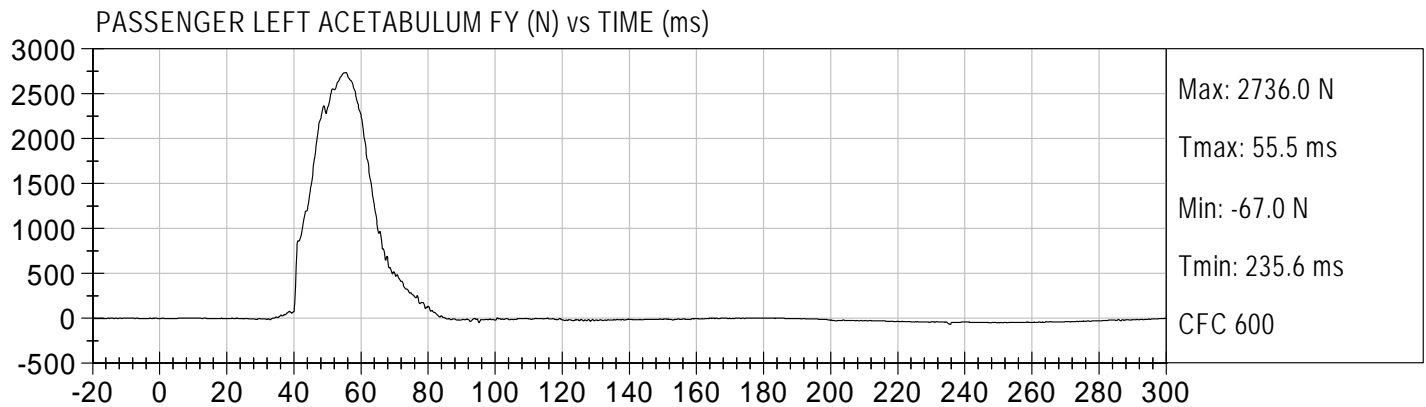


PASSENGER LOWER SPINE Y Velocity (kph) vs TIME (ms)



PASSENGER LOWER SPINE Z Velocity (kph) vs TIME (ms)





## **APPENDIX D**

### **VEHICLE AND MDB ACCELEROMETER RESPONSE DATA**

## TABLE OF DATA PLOTS

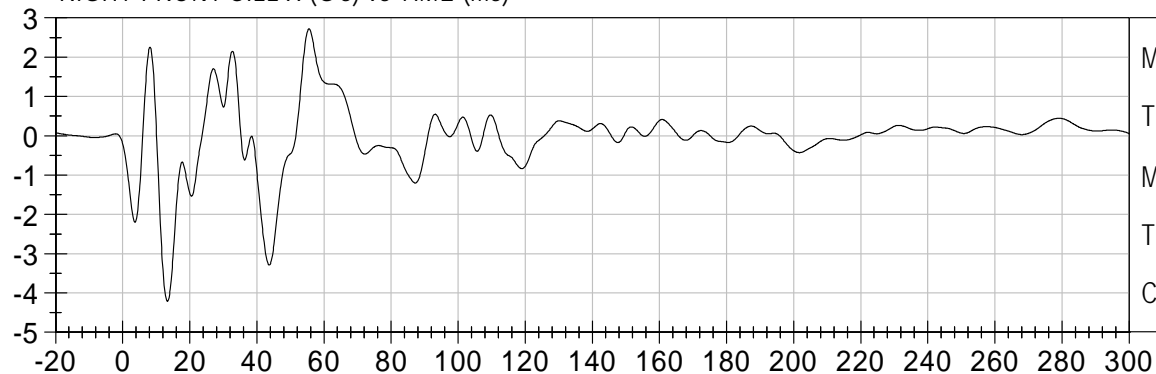
<b><u>No.</u></b>	<b><u>Description</u></b>	<b><u>Page No.</u></b>
Figure No. 1.	Right Sill at Front Seat (X) Acceleration vs. Time	D-1
Figure No. 2.	Right Sill at Front Seat (X) Velocity vs. Time	D-1
Figure No. 3.	Right Sill at Front Seat (Y) Acceleration vs. Time	D-1
Figure No. 4.	Right Sill at Front Seat (Y) Velocity vs. Time	D-1
Figure No. 5.	Right Sill at Front Seat (Z) Acceleration vs. Time	D-2
Figure No. 6.	Right Sill at Front Seat (Z) Velocity vs. Time	D-2
Figure No. 7.	Right Sill at Front Seat Resultant Acceleration vs. Time	D-2
Figure No. 8.	Right Sill at Rear Seat (X) Acceleration vs. Time	D-3
Figure No. 9.	Right Sill at Rear Seat (X) Velocity vs. Time	D-3
Figure No. 10.	Right Sill at Rear Seat (Y) Acceleration vs. Time	D-3
Figure No. 11.	Right Sill at Rear Seat (Y) Velocity vs. Time	D-3
Figure No. 12.	Right Sill at Rear Seat (Z) Acceleration vs. Time	D-4
Figure No. 13.	Right Sill at Rear Seat (Z) Velocity vs. Time	D-4
Figure No. 14.	Right Sill at Rear Seat Resultant Acceleration vs. Time	D-4
Figure No. 15.	Rear Floorpan Above Axle (X) Acceleration vs. Time	D-5
Figure No. 16.	Rear Floorpan Above Axle (X) Velocity vs. Time	D-5
Figure No. 17.	Rear Floorpan Above Axle (Y) Acceleration vs. Time	D-5
Figure No. 18.	Rear Floorpan Above Axle (Y) Velocity vs. Time	D-5
Figure No. 19.	Rear Floorpan Above Axle (Z) Acceleration vs. Time	D-6
Figure No. 20.	Rear Floorpan Above Axle (Z) Velocity vs. Time	D-6
Figure No. 21.	Rear Floorpan Above Axle Resultant Acceleration vs. Time	D-6
Figure No. 22.	Left Sill at Rear Door (Y) Acceleration vs. Time	D-7
Figure No. 23.	Left Sill at Rear Door (Y) Velocity vs. Time	D-7
Figure No. 24.	Left Sill at Front Door (Y) Acceleration vs. Time	D-7
Figure No. 25.	Left Sill at Front Door (Y) Velocity vs. Time	D-7
Figure No. 26.	Right Rear Occ. Compartment (Y) Acceleration vs. Time	D-8
Figure No. 27.	Right Rear Occ. Compartment (Y) Velocity vs. Time	D-8
Figure No. 28.	Left B-Post Lower (Y) Acceleration vs. Time	D-9



<b><u>No.</u></b>	<b><u>Description</u></b>	<b><u>Page No.</u></b>
Figure No. 29.	Left B-Post Lower (Y) Velocity vs. Time	D-9
Figure No. 30.	Left B-Post Middle (Y) Acceleration vs. Time	D-9
Figure No. 31.	Left B-Post Middle (Y) Velocity vs. Time	D-9
Figure No. 32.	Left A-Post Lower (Y) Acceleration vs. Time	D-10
Figure No. 33.	Left A-Post Lower (Y) Velocity vs. Time	D-10
Figure No. 34.	Left A-Post Middle (Y) Acceleration vs. Time	D-10
Figure No. 35.	Left A-Post Middle (Y) Velocity vs. Time	D-10
Figure No. 36.	Front Seat Track (Y) Acceleration vs. Time	D-11
Figure No. 37.	Front Seat Track (Y) Velocity vs. Time	D-11
Figure No. 38.	Vehicle CG (X) Acceleration vs. Time	D-12
Figure No. 39.	Vehicle CG (X) Velocity vs. Time	D-12
Figure No. 40.	Vehicle CG (Y) Acceleration vs. Time	D-12
Figure No. 41.	Vehicle CG (Y) Velocity vs. Time	D-12
Figure No. 42.	Vehicle CG (Z) Acceleration vs. Time	D-13
Figure No. 43.	Vehicle CG (Z) Velocity vs. Time	D-13
Figure No. 44.	Vehicle CG Resultant Acceleration vs. Time	D-13
Figure No. 45.	MDB CG (X) Acceleration vs. Time	D-14
Figure No. 46.	MDB CG (X) Velocity vs. Time	D-14
Figure No. 47.	MDB CG (Y) Acceleration vs. Time	D-14
Figure No. 48.	MDB CG (Y) Velocity vs. Time	D-14
Figure No. 49.	MDB CG (Z) Acceleration vs. Time	D-15
Figure No. 50.	MDB CG (Z) Velocity vs. Time	D-15
Figure No. 51.	MDB CG Resultant Acceleration vs. Time	D-15
Figure No. 52.	MDB Rear (X) Acceleration vs. Time	D-16
Figure No. 53.	MDB Rear (X) Velocity vs. Time	D-16
Figure No. 54.	MDB Rear (Y) Acceleration vs. Time	D-16
Figure No. 55.	MDB Rear (Y) Velocity vs. Time	D-16

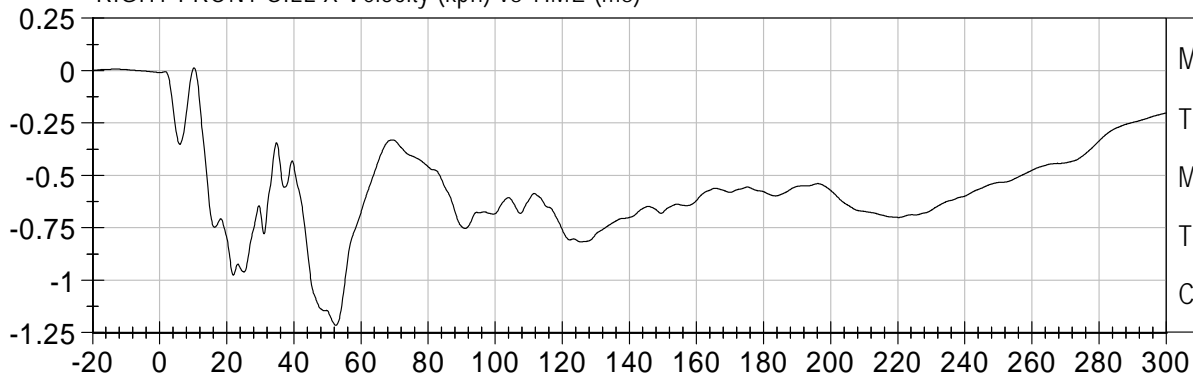


RIGHT FRONT SILL X (G's) vs TIME (ms)



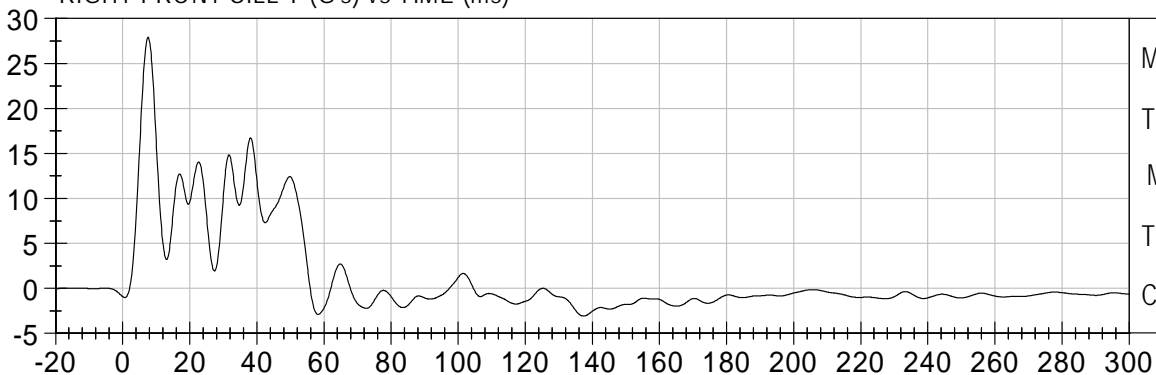
Max: 2.7 G's  
Tmax: 55.5 ms  
Min: -4.2 G's  
Tmin: 13.3 ms  
CFC 60

RIGHT FRONT SILL X Velocity (kph) vs TIME (ms)



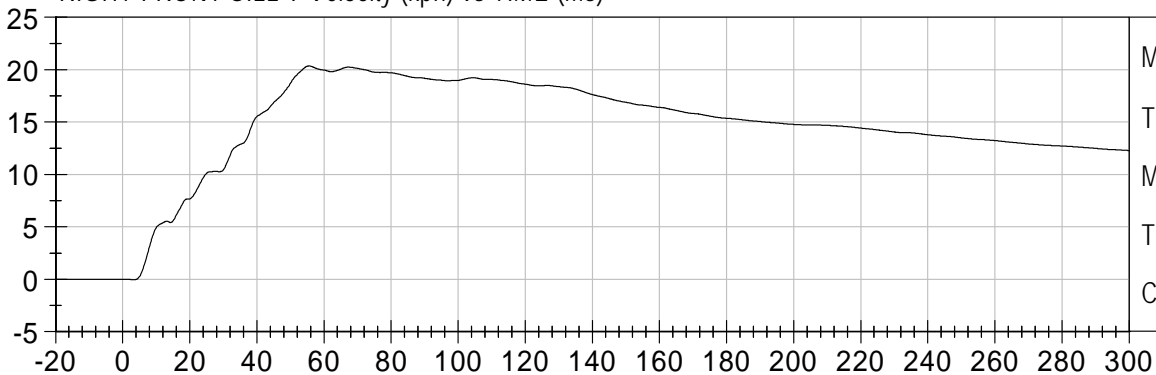
Max: 0.0 kph  
Tmax: 10.2 ms  
Min: -1.2 kph  
Tmin: 52.5 ms  
CFC 180

RIGHT FRONT SILL Y (G's) vs TIME (ms)

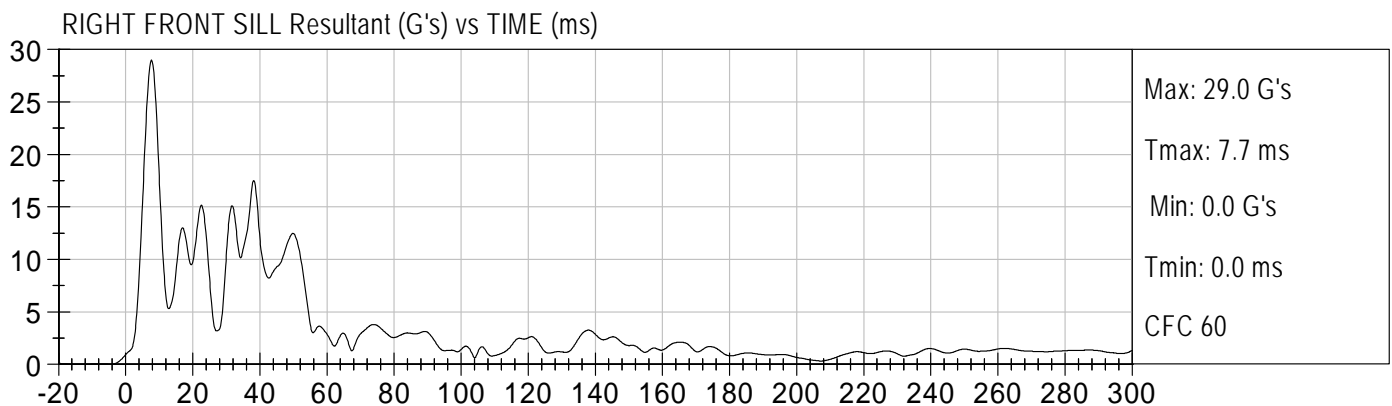
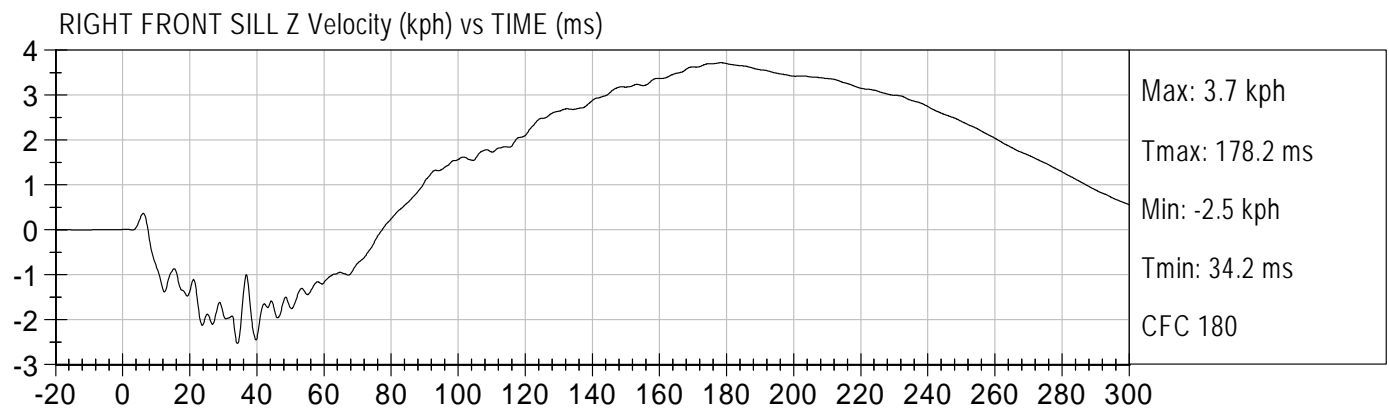
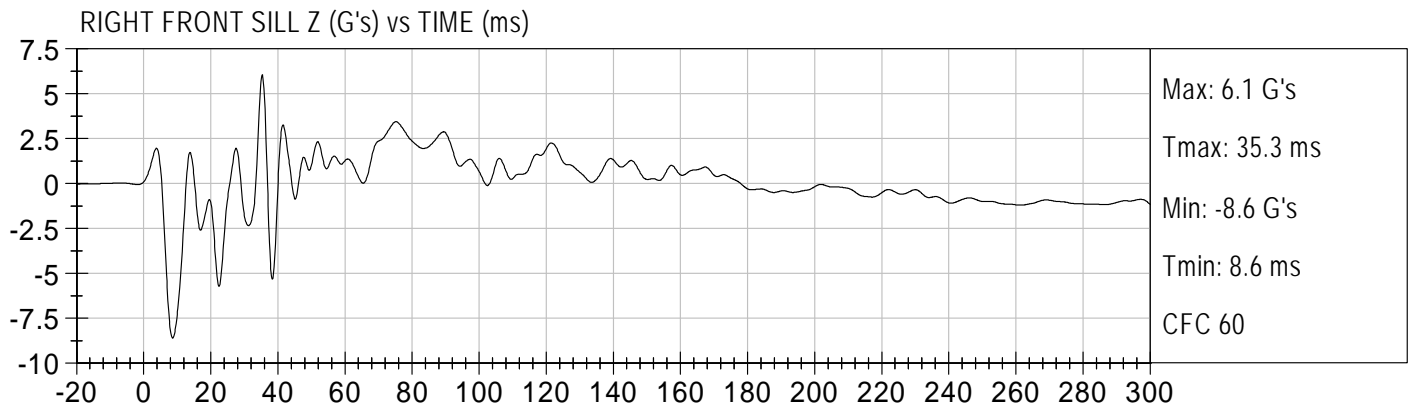


Max: 27.9 G's  
Tmax: 7.6 ms  
Min: -3.1 G's  
Tmin: 137.4 ms  
CFC 60

RIGHT FRONT SILL Y Velocity (kph) vs TIME (ms)

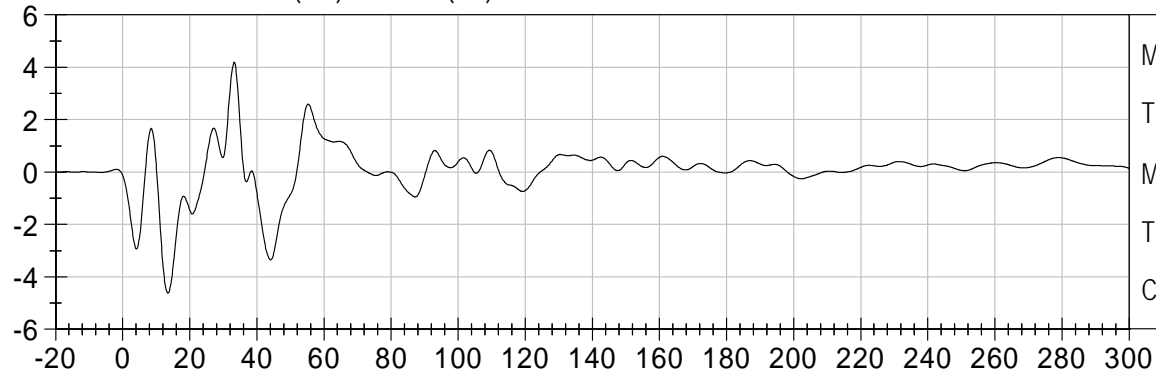


Max: 20.4 kph  
Tmax: 55.5 ms  
Min: -0.0 kph  
Tmin: 3.4 ms  
CFC 180

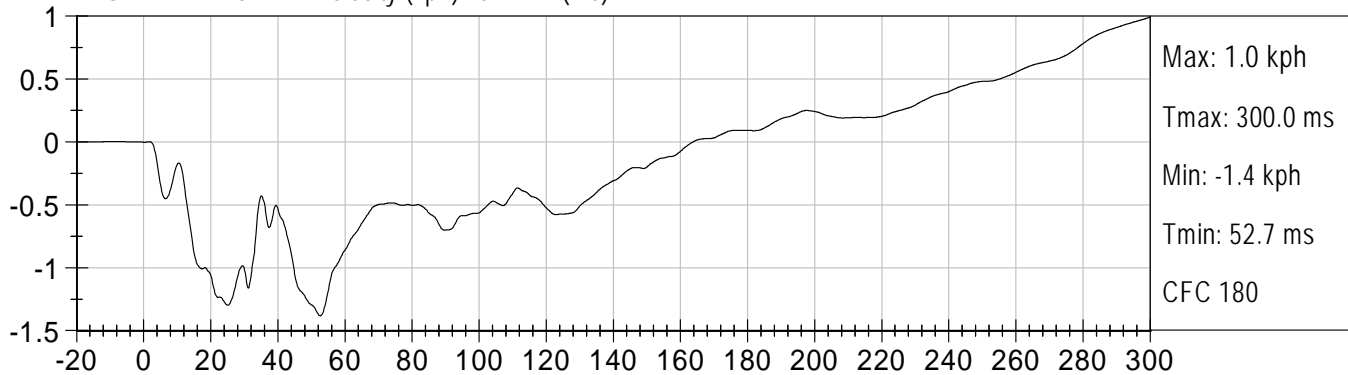




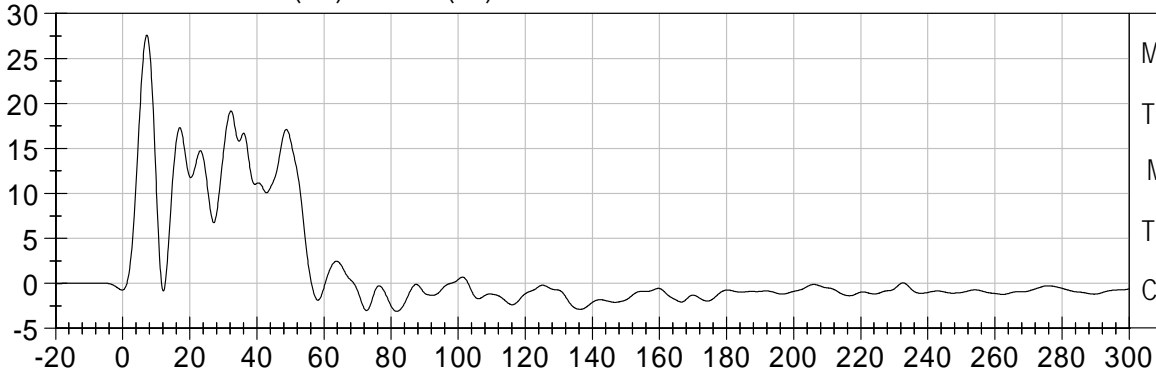
RIGHT REAR SILL X (G's) vs TIME (ms)



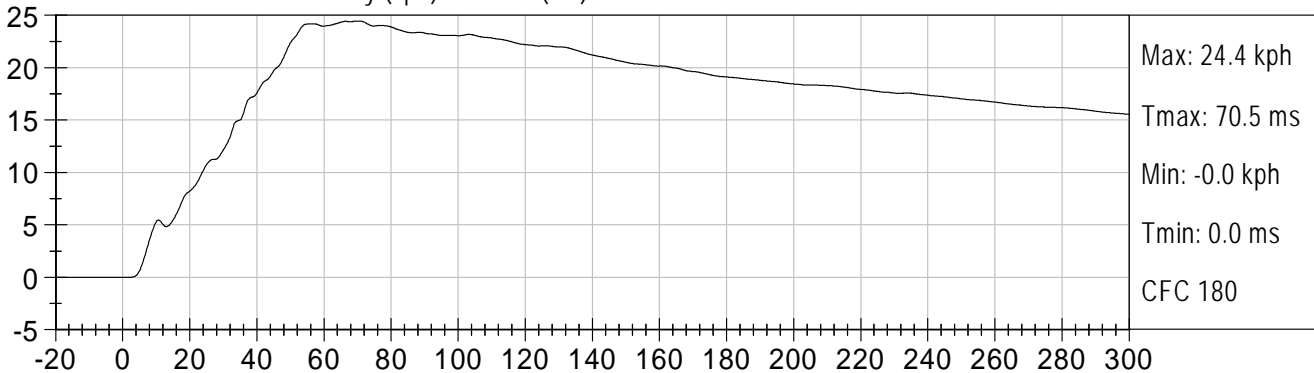
RIGHT REAR SILL X Velocity (kph) vs TIME (ms)



RIGHT REAR SILL Y (G's) vs TIME (ms)



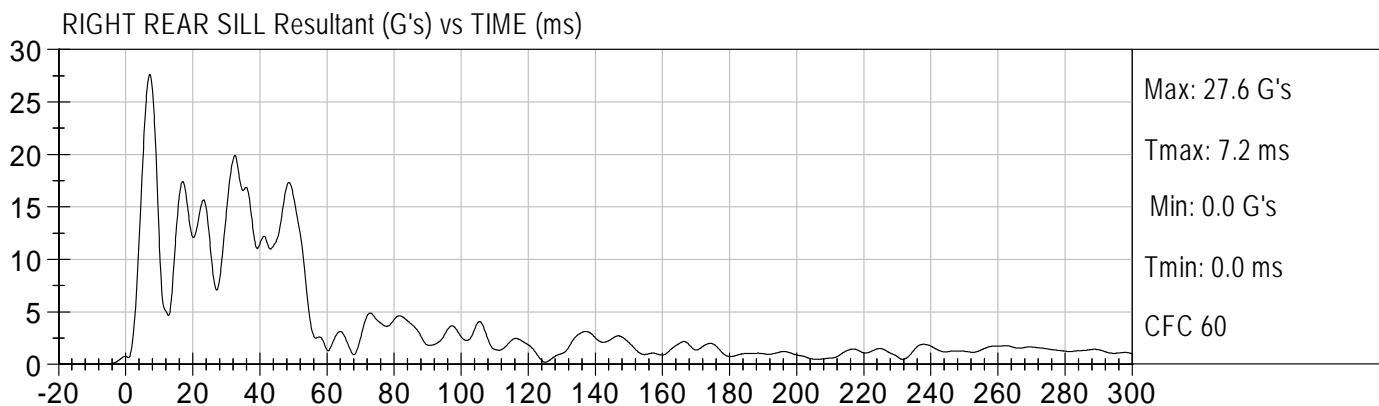
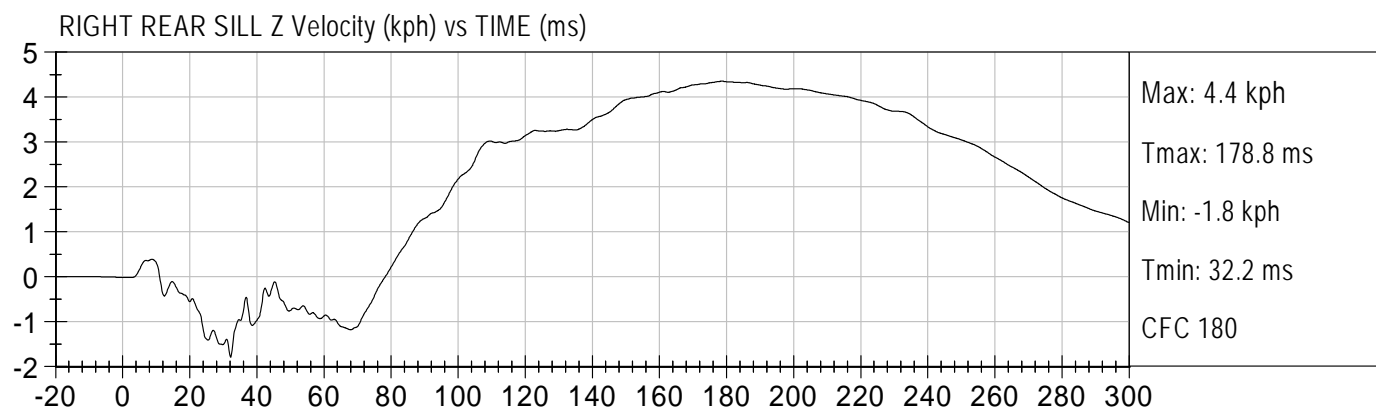
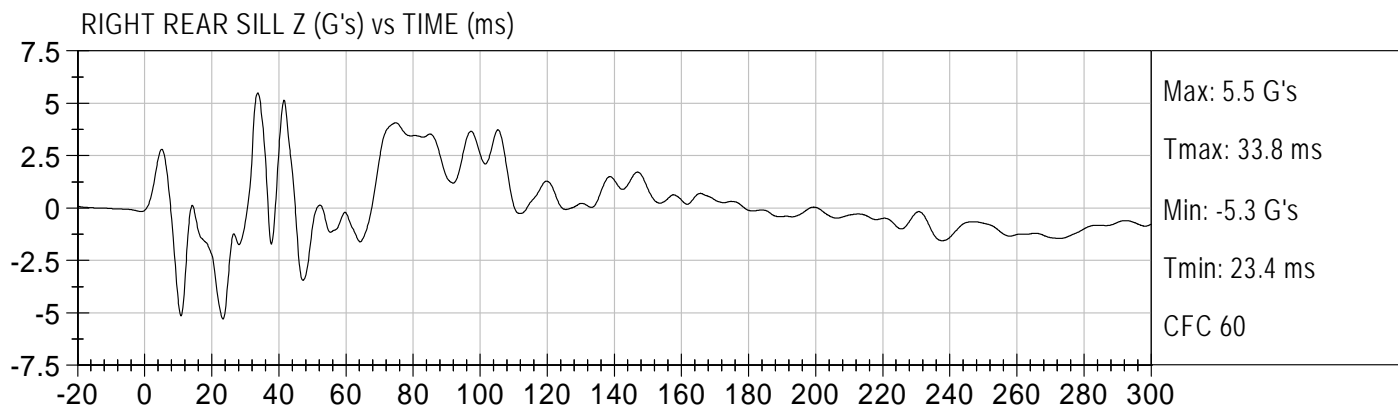
RIGHT REAR SILL Y Velocity (kph) vs TIME (ms)

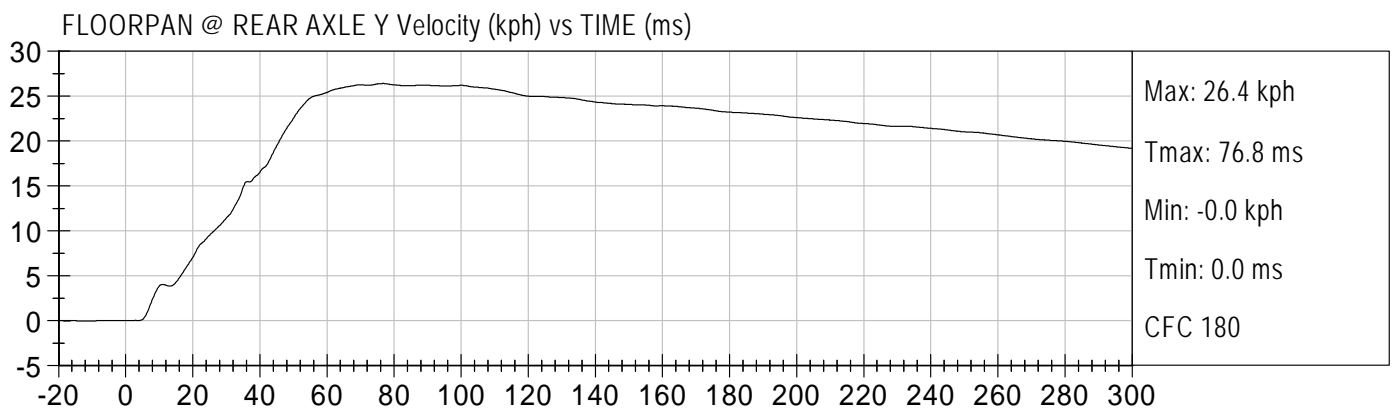
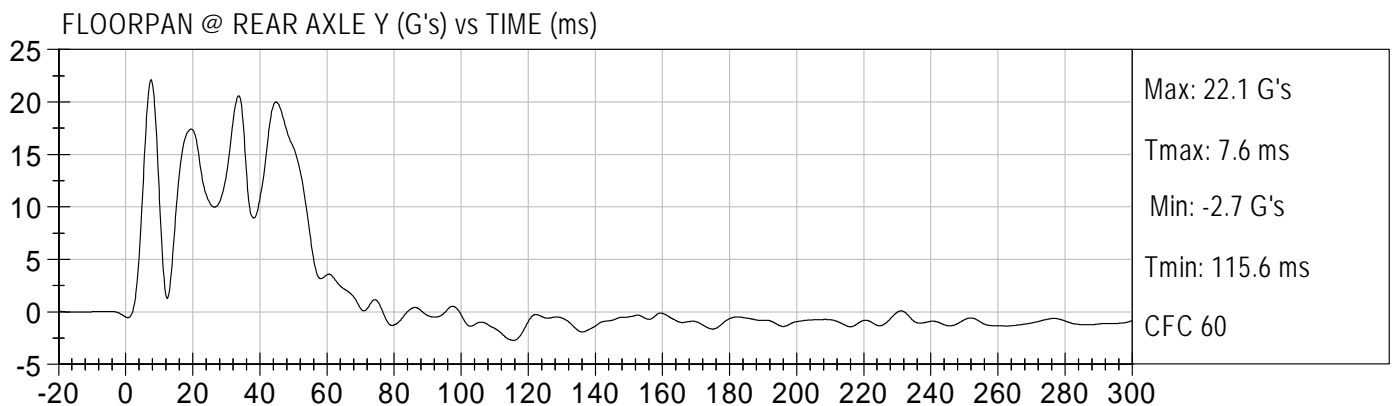
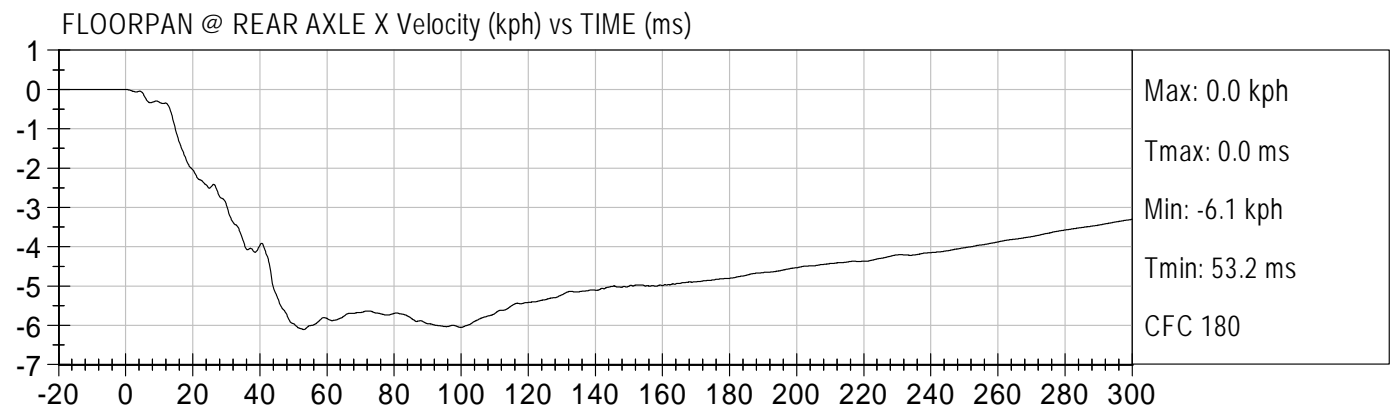
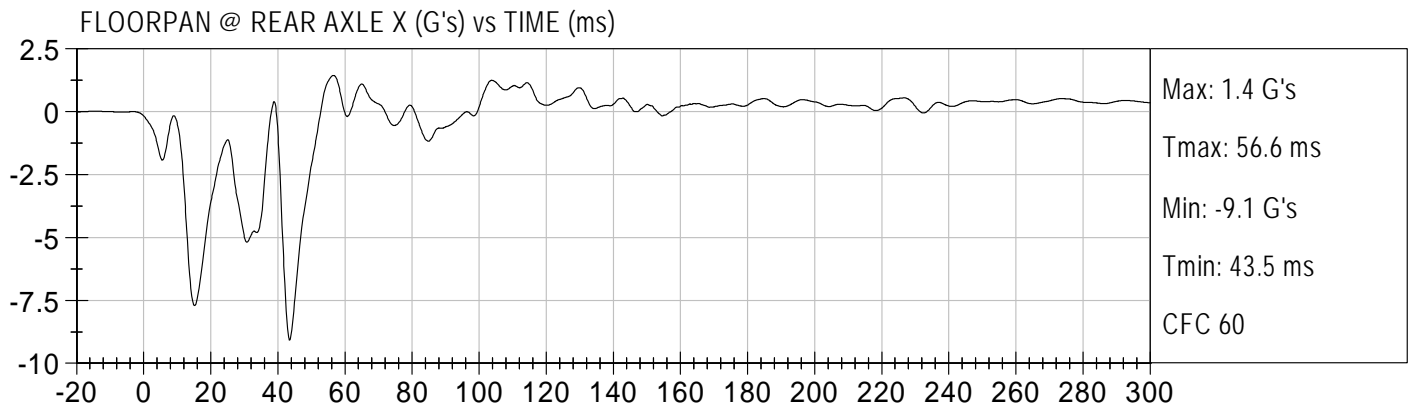




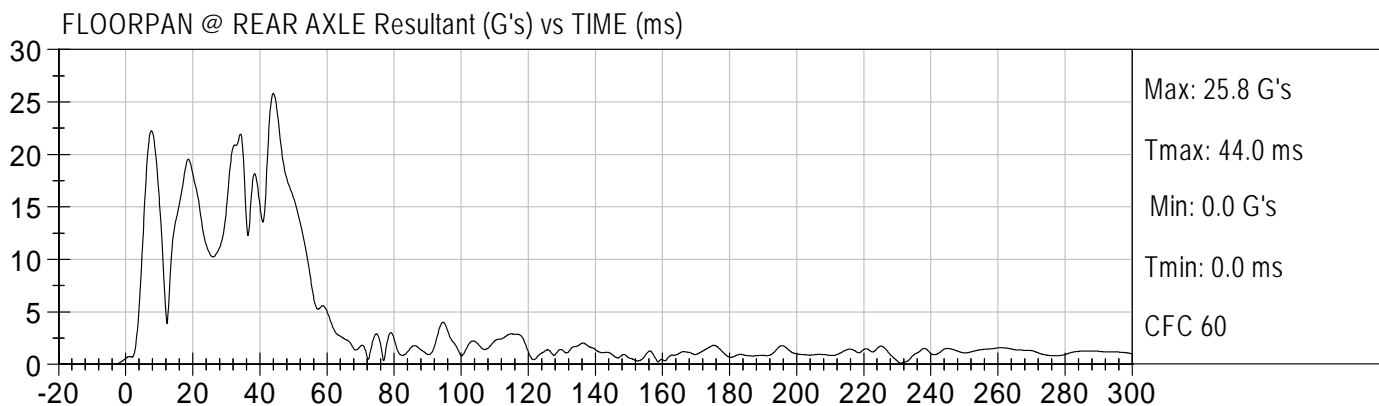
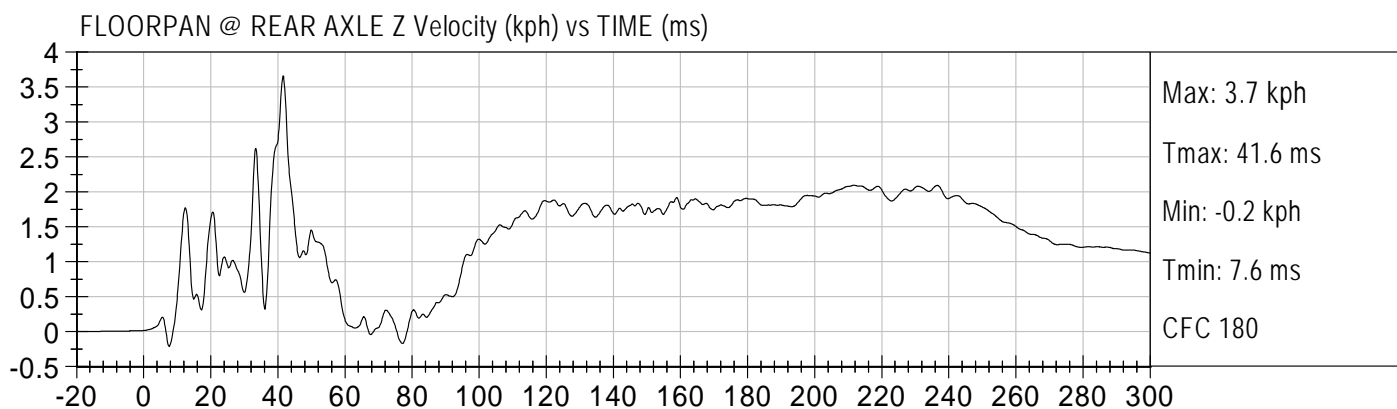
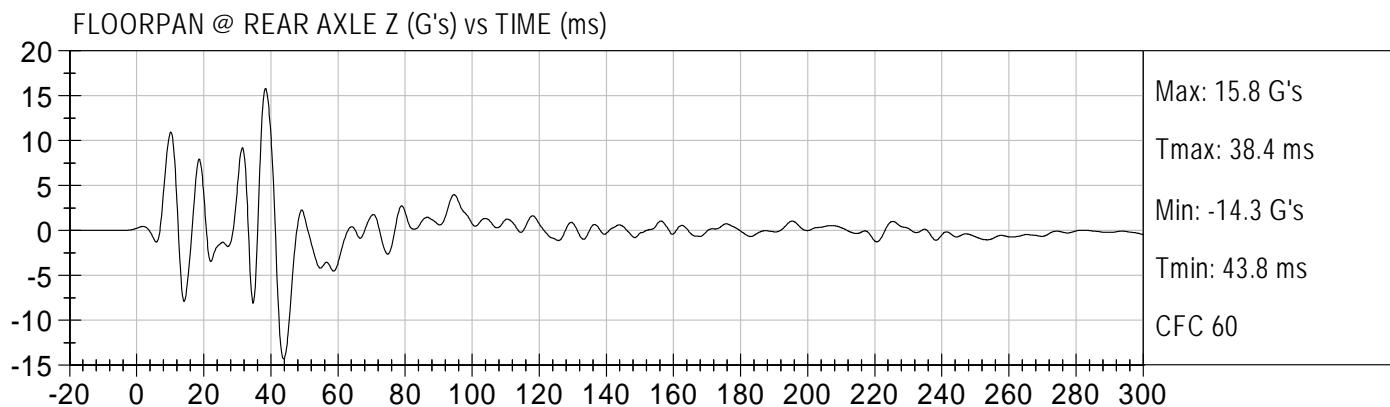
48/24 90° Side Impact  
2010 Ford Taurus SE - CA0206

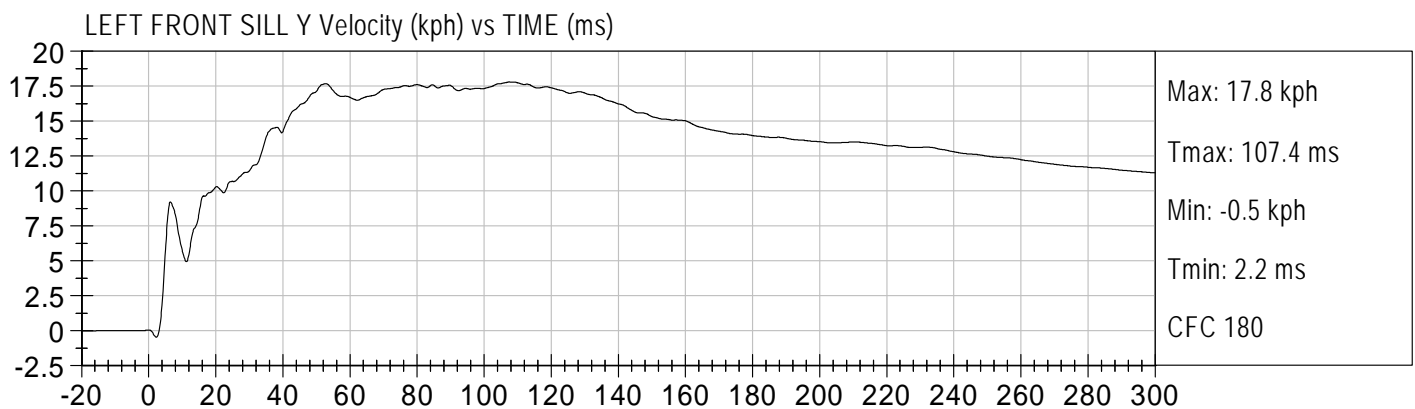
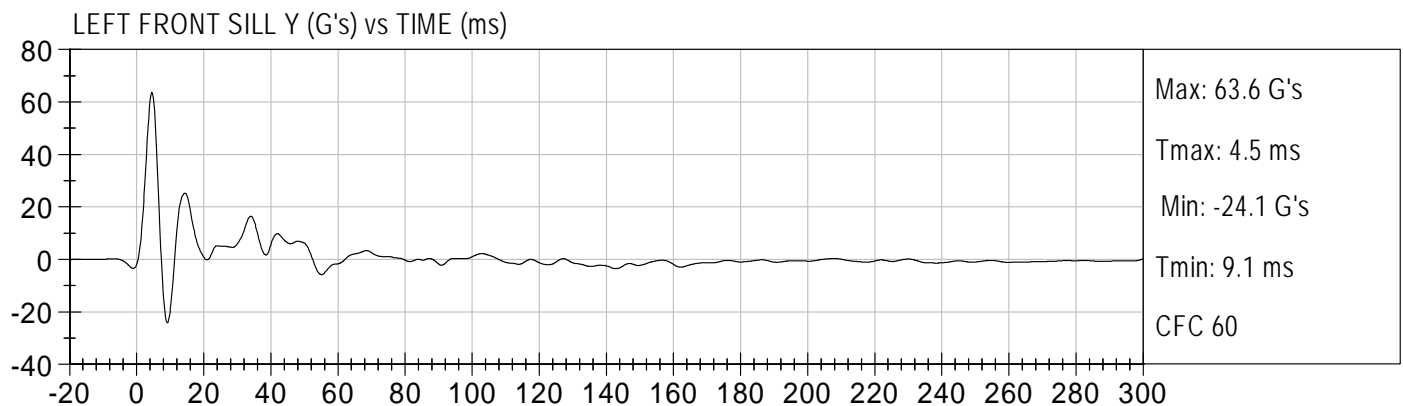
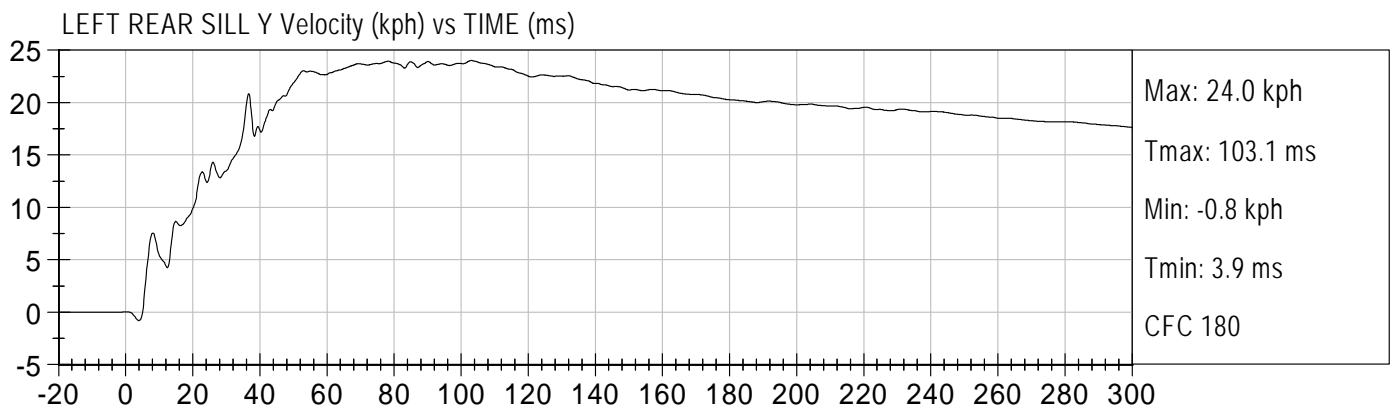
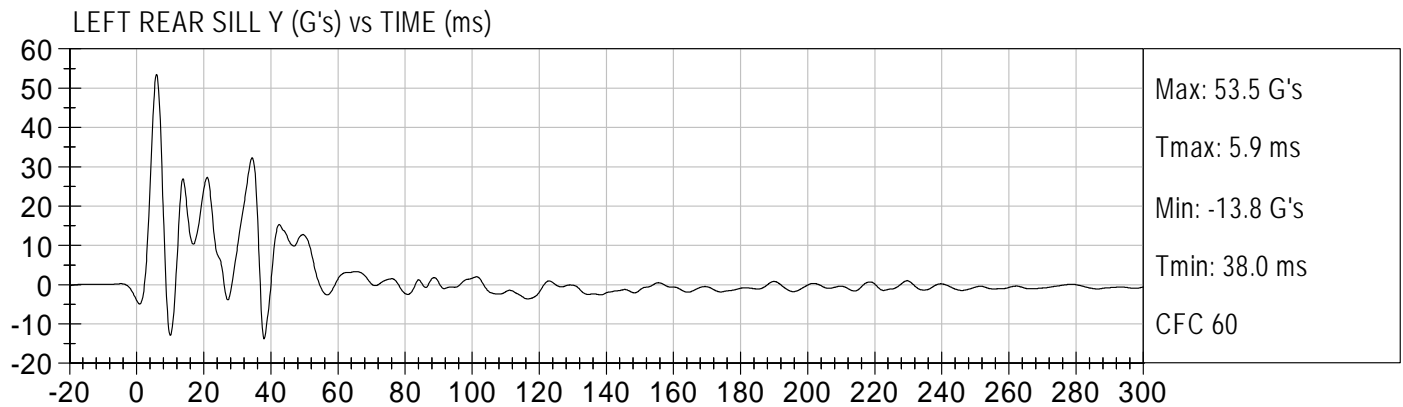
Test Date: 03/16/2010  
Speed: 32.8 mph (52.8 km/h)

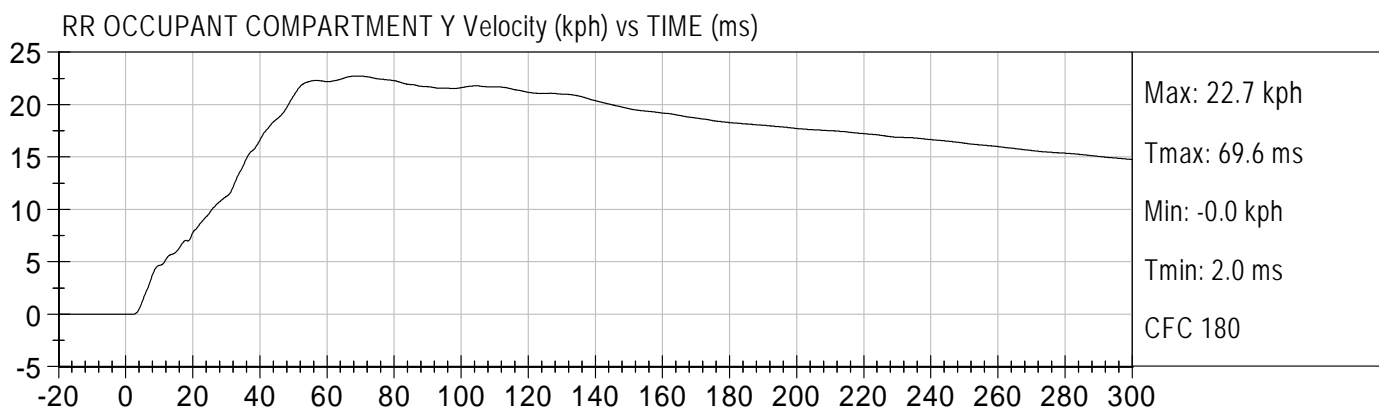
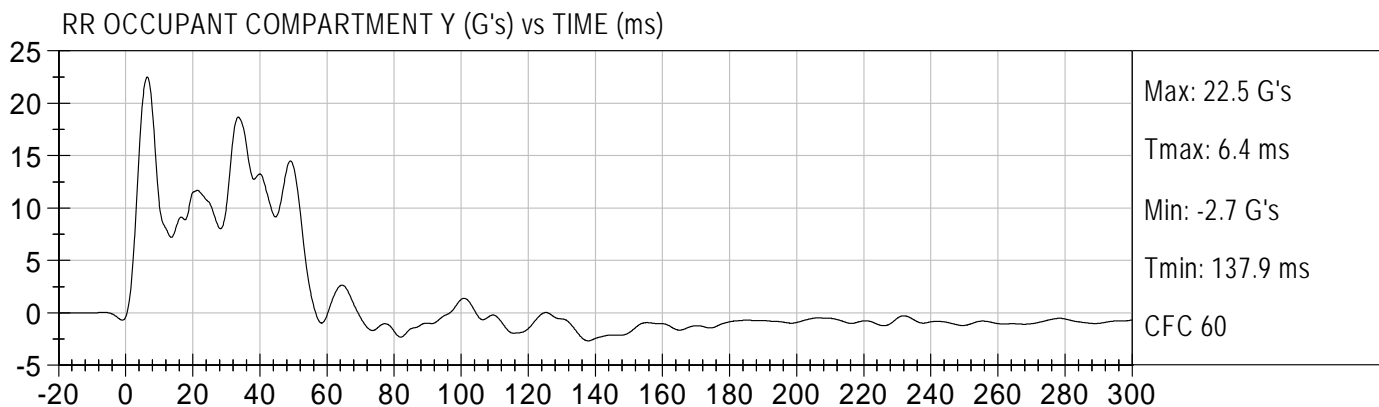






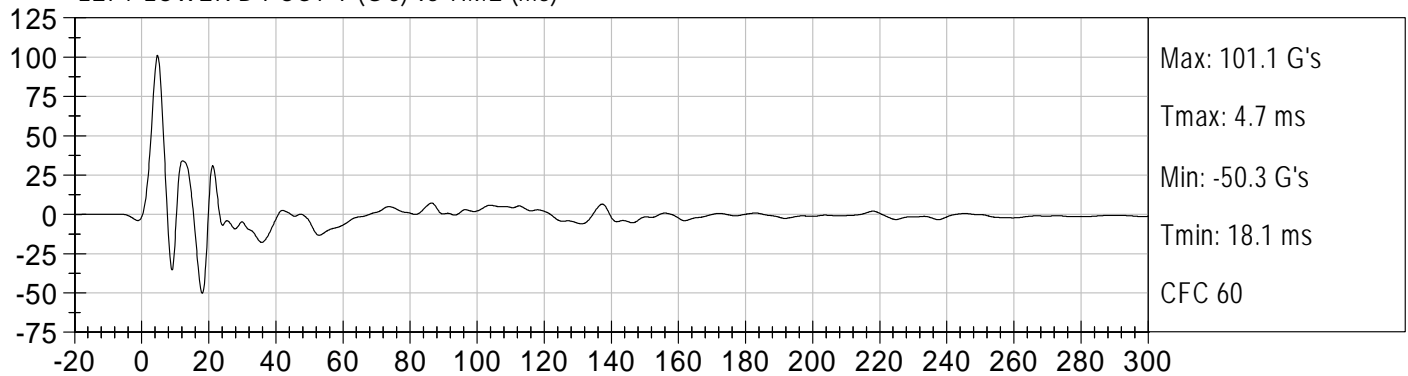




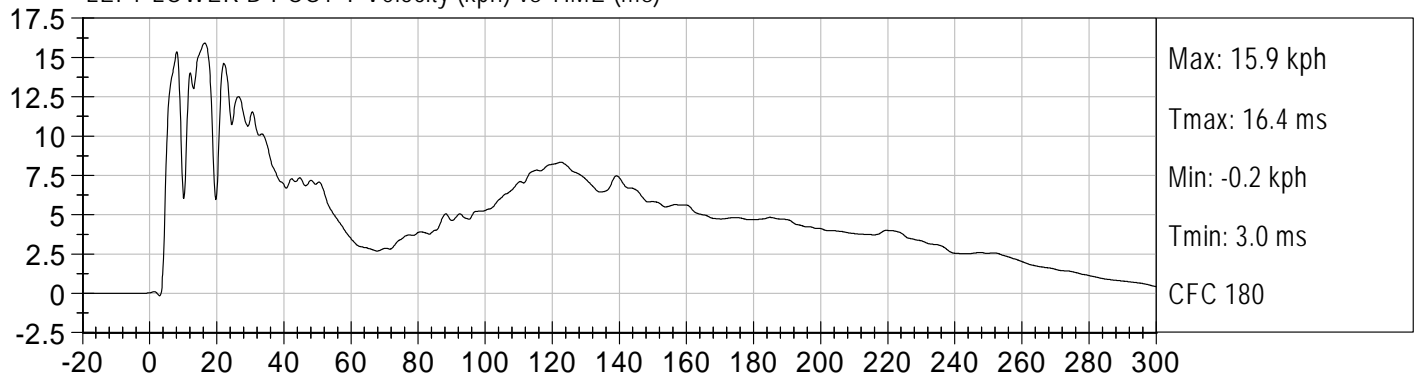




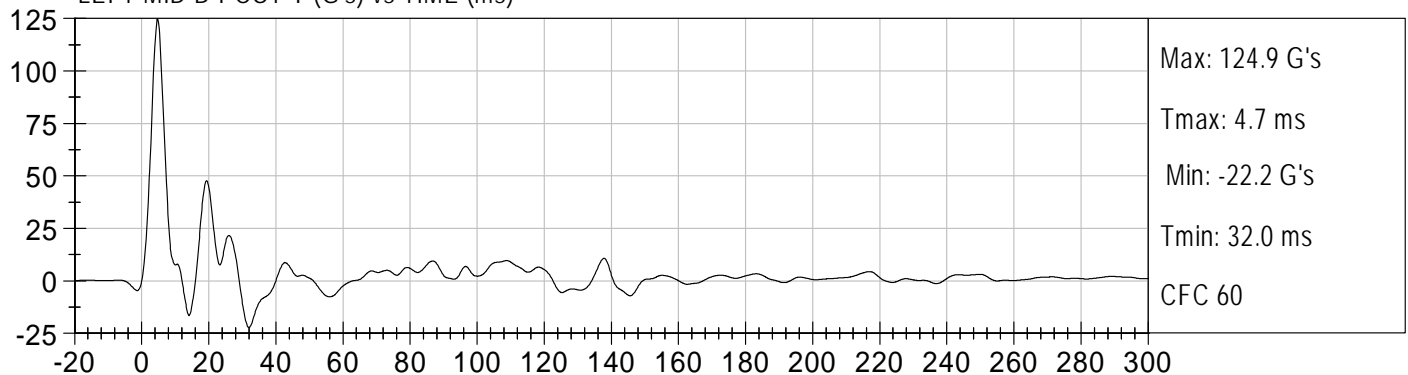
LEFT LOWER B-POST Y (G's) vs TIME (ms)



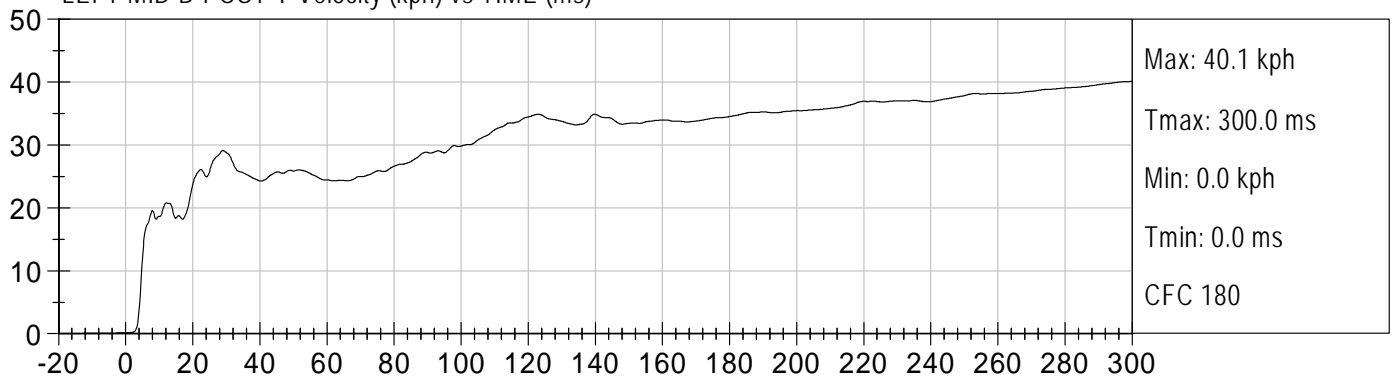
LEFT LOWER B-POST Y Velocity (kph) vs TIME (ms)



LEFT MID B-POST Y (G's) vs TIME (ms)

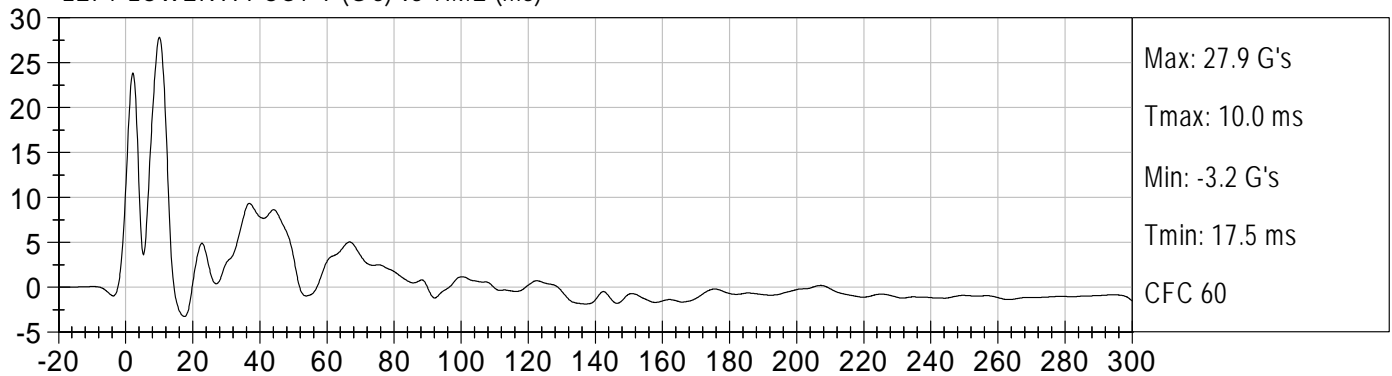


LEFT MID B-POST Y Velocity (kph) vs TIME (ms)

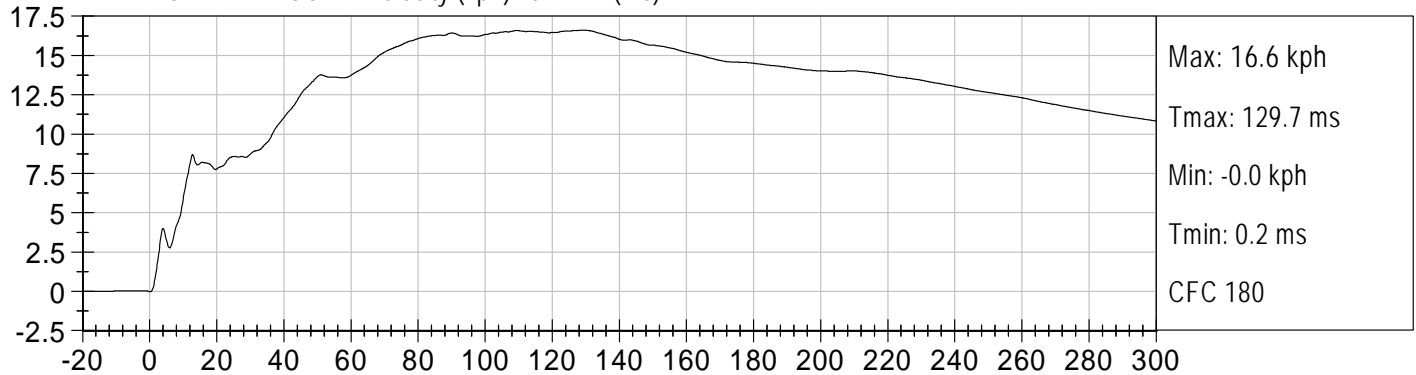




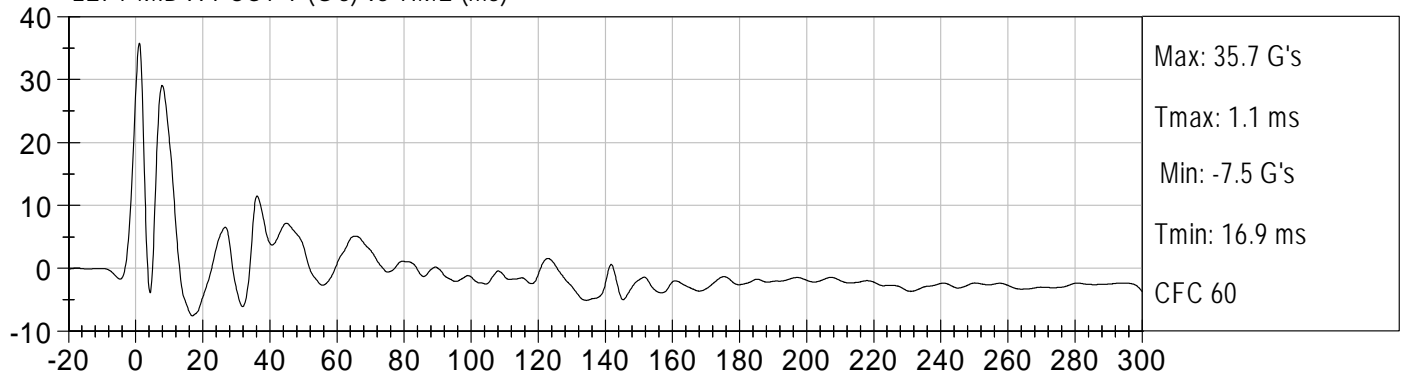
LEFT LOWER A-POST Y (G's) vs TIME (ms)



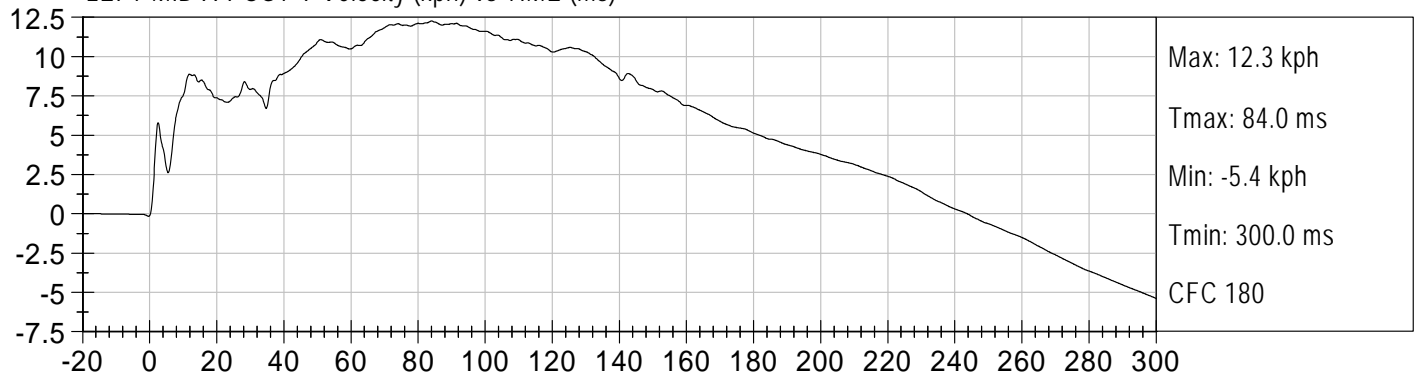
LEFT LOWER A-POST Y Velocity (kph) vs TIME (ms)

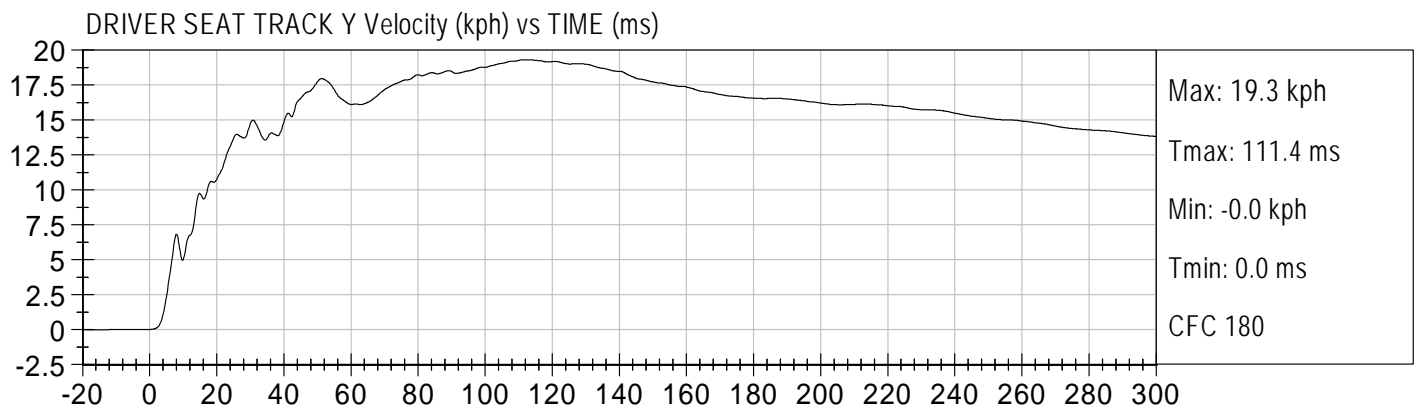
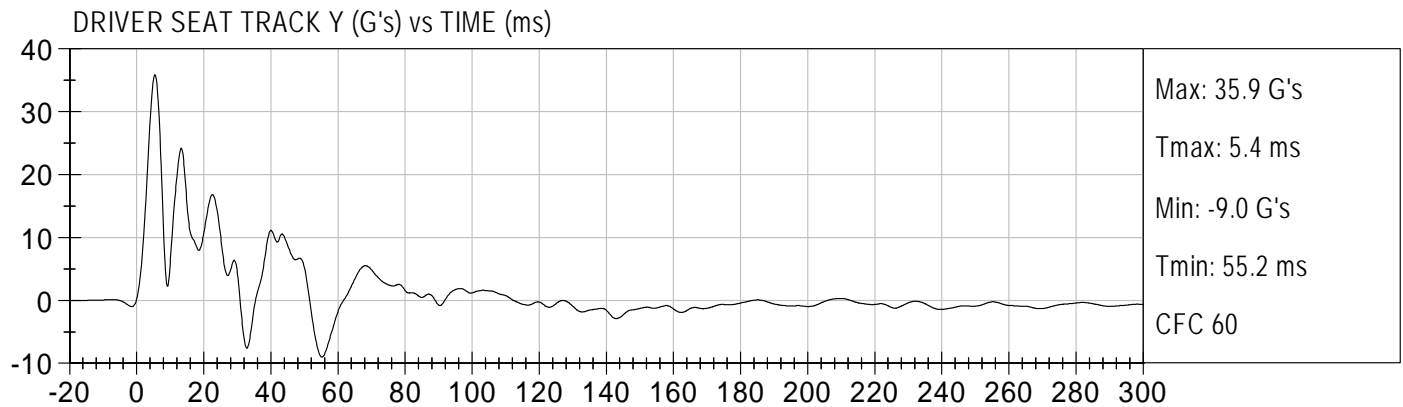


LEFT MID A-POST Y (G's) vs TIME (ms)



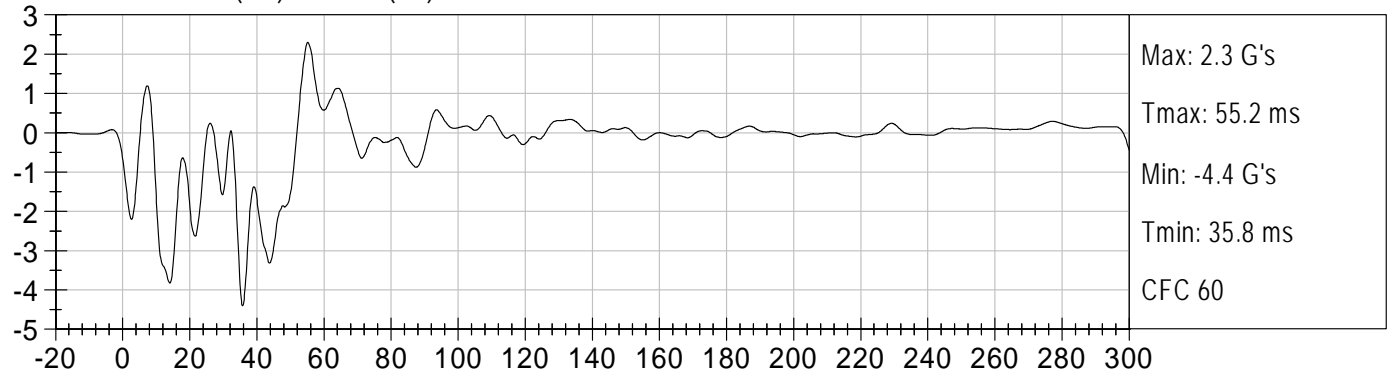
LEFT MID A-POST Y Velocity (kph) vs TIME (ms)



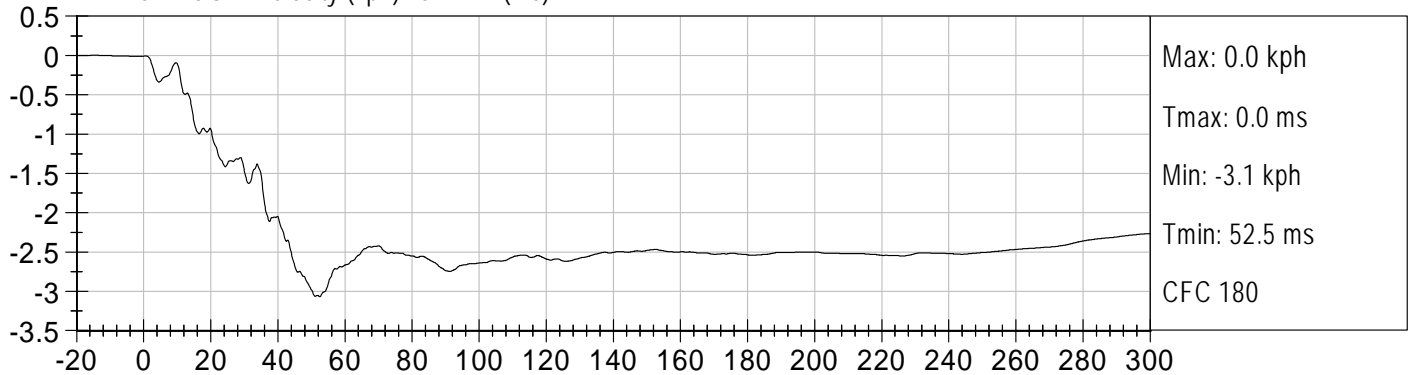




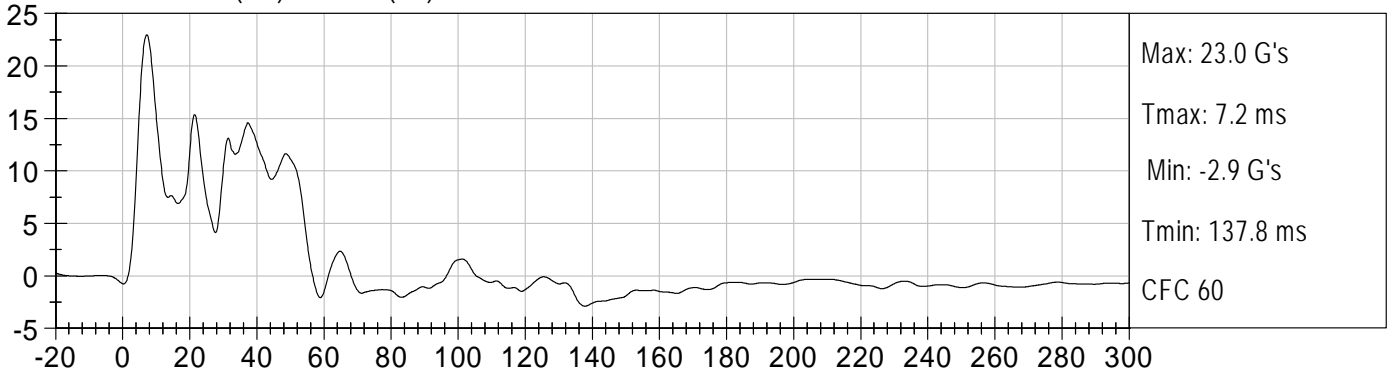
VEHICLE CG X (G's) vs TIME (ms)



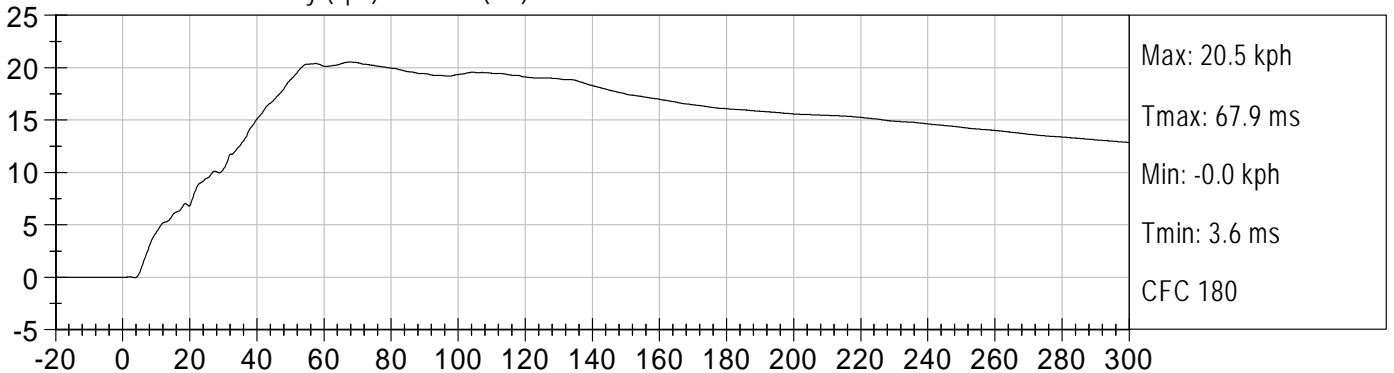
VEHICLE CG X Velocity (kph) vs TIME (ms)



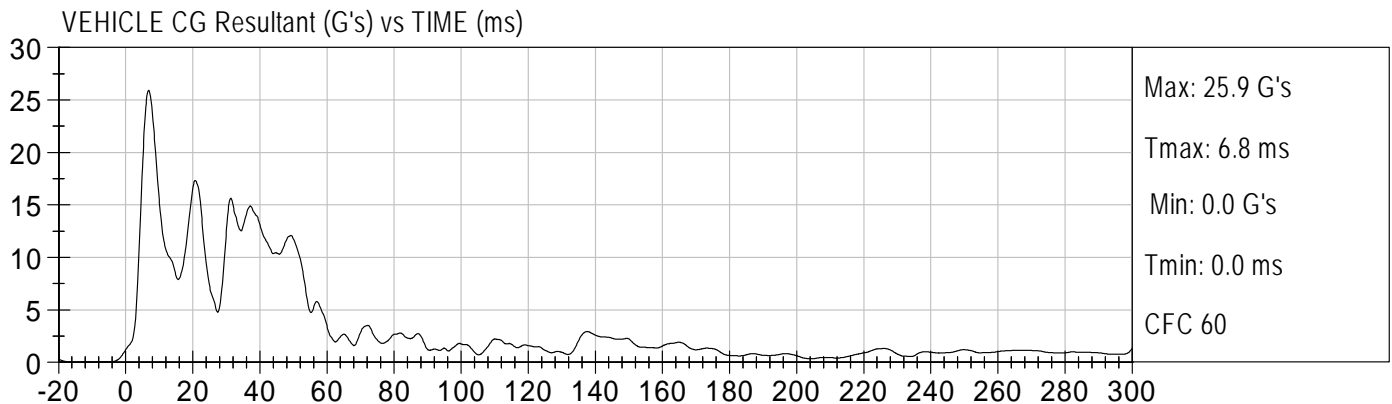
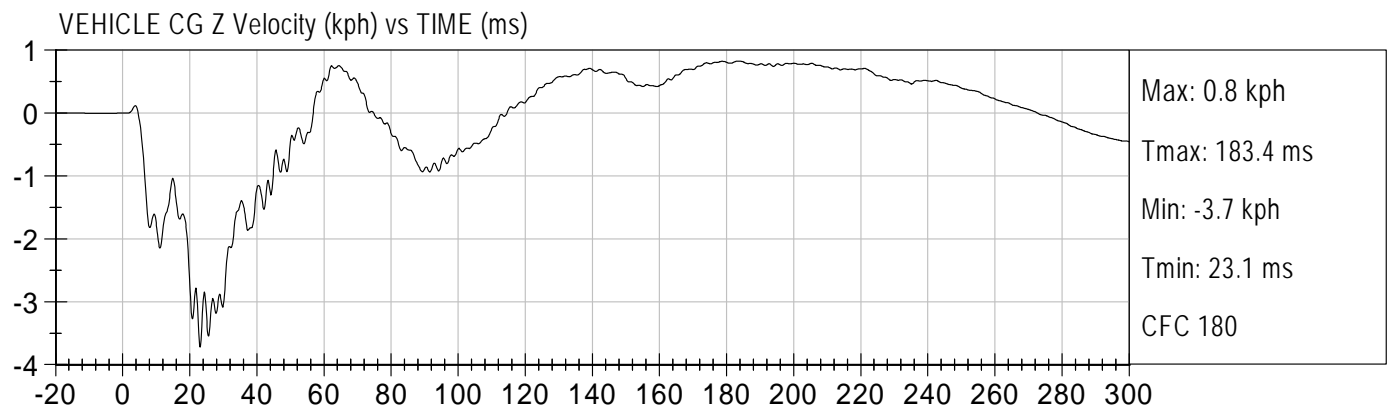
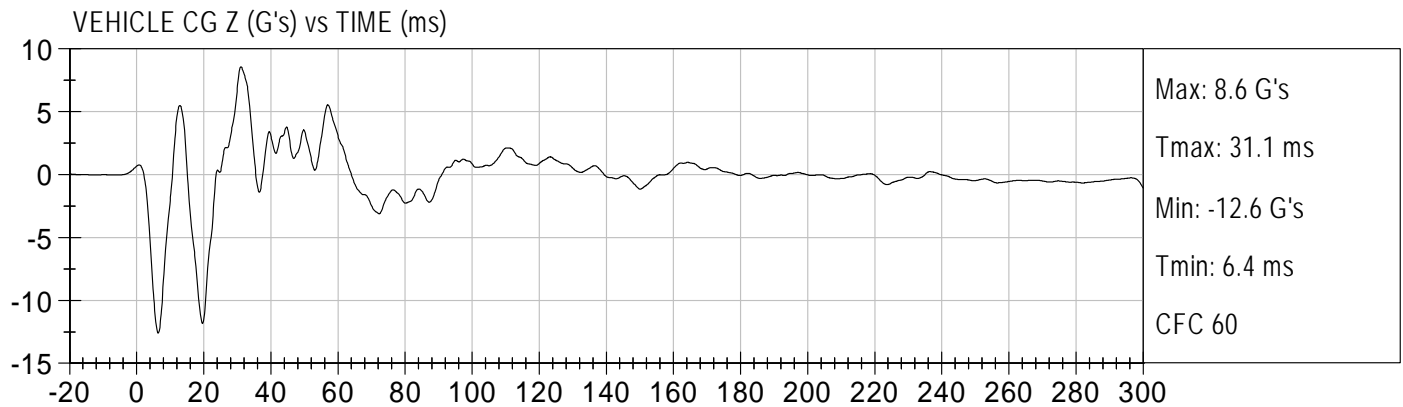
VEHICLE CG Y (G's) vs TIME (ms)



VEHICLE CG Y Velocity (kph) vs TIME (ms)



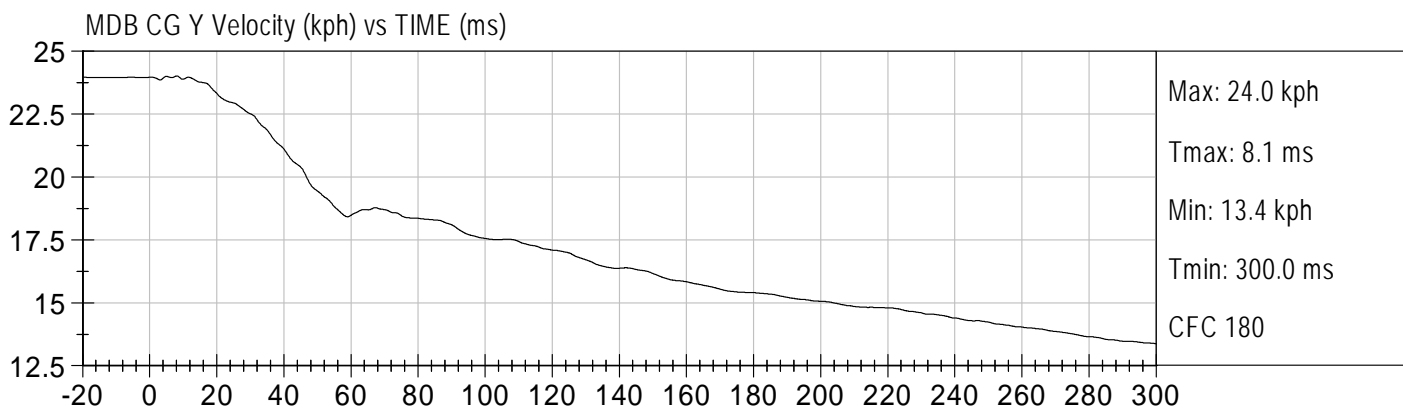
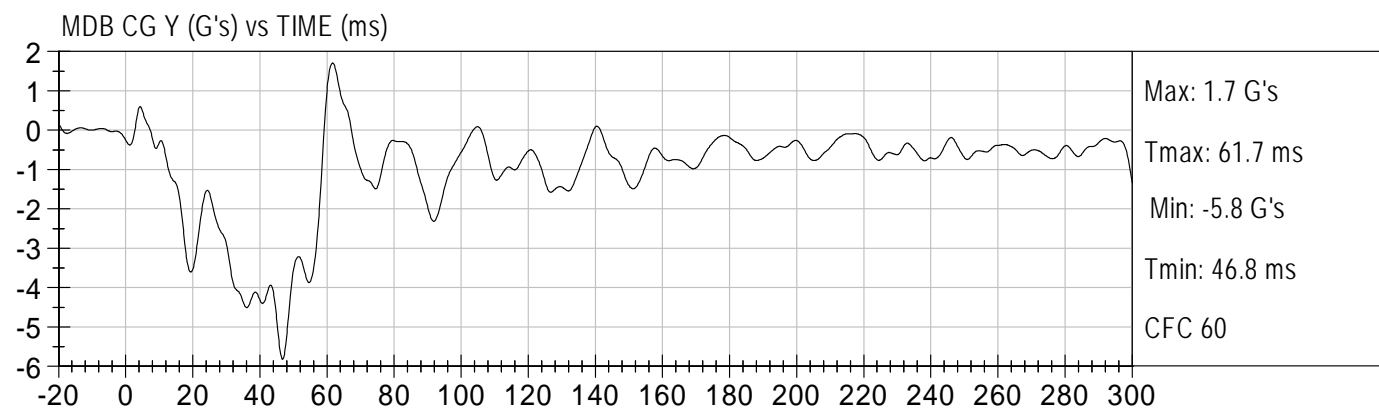
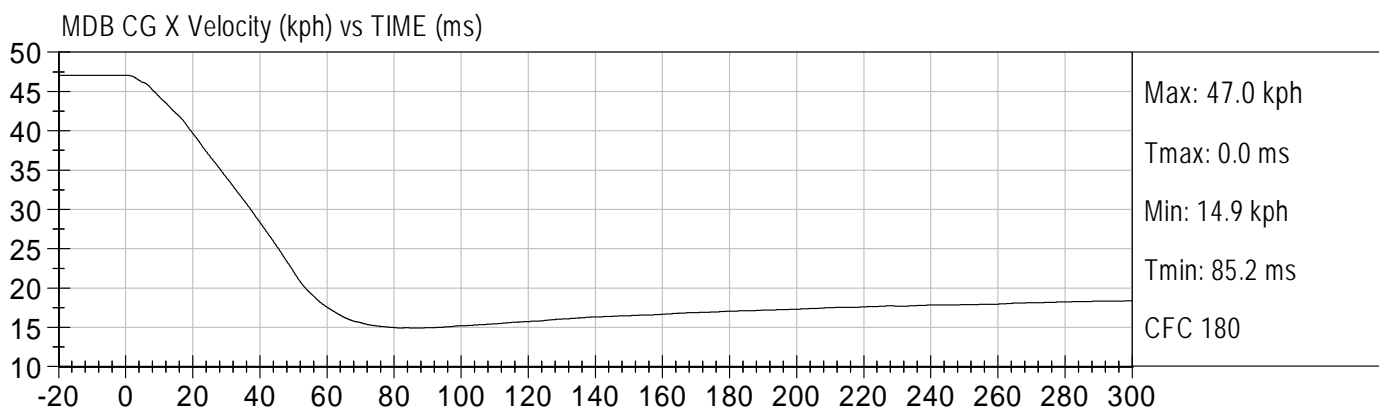
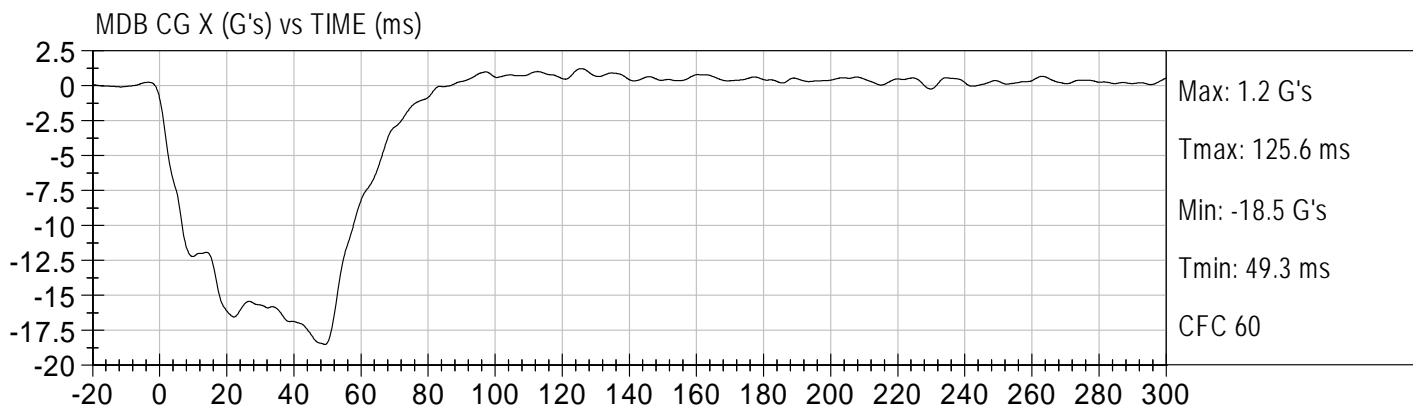






48/24 90° Side Impact  
2010 Ford Taurus SE - CA0206

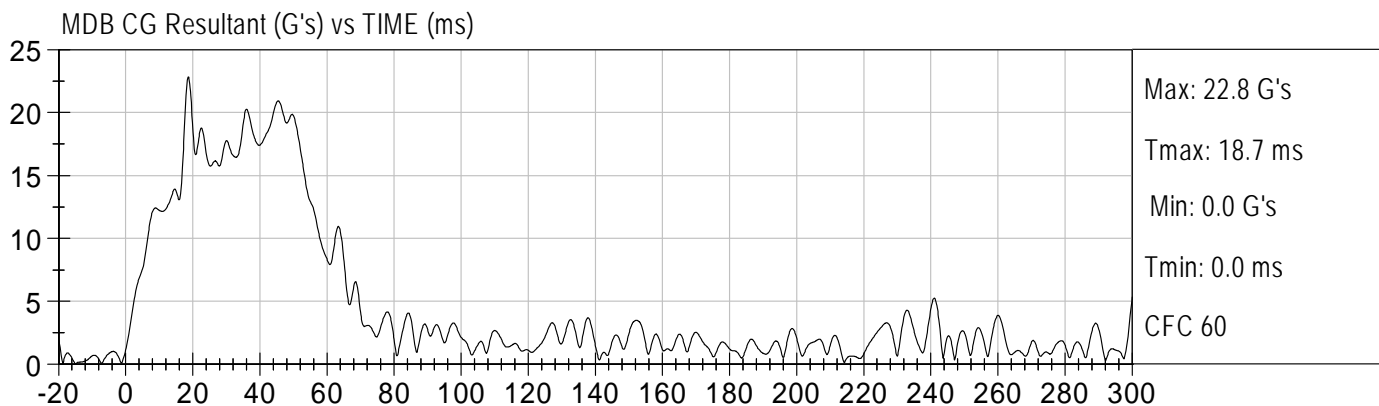
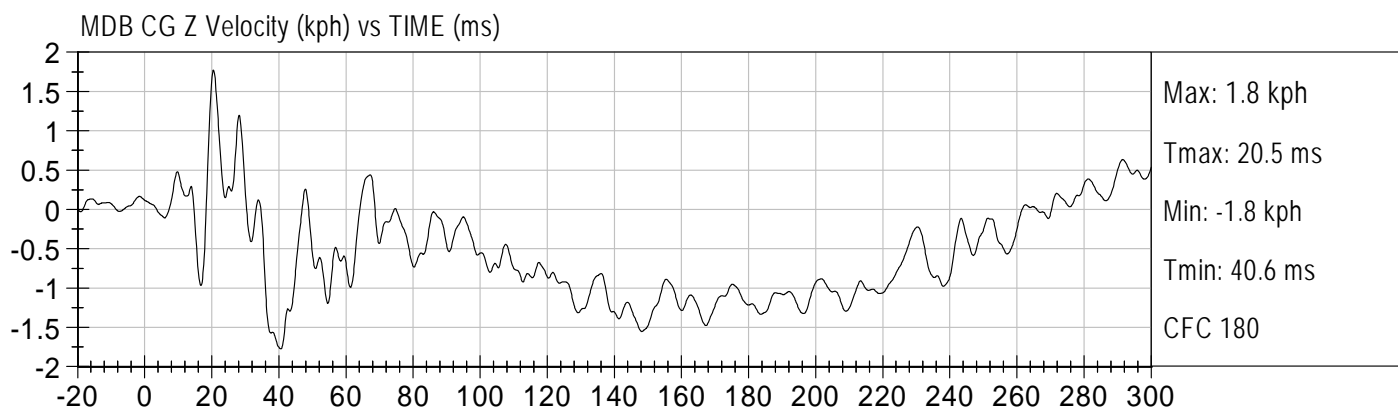
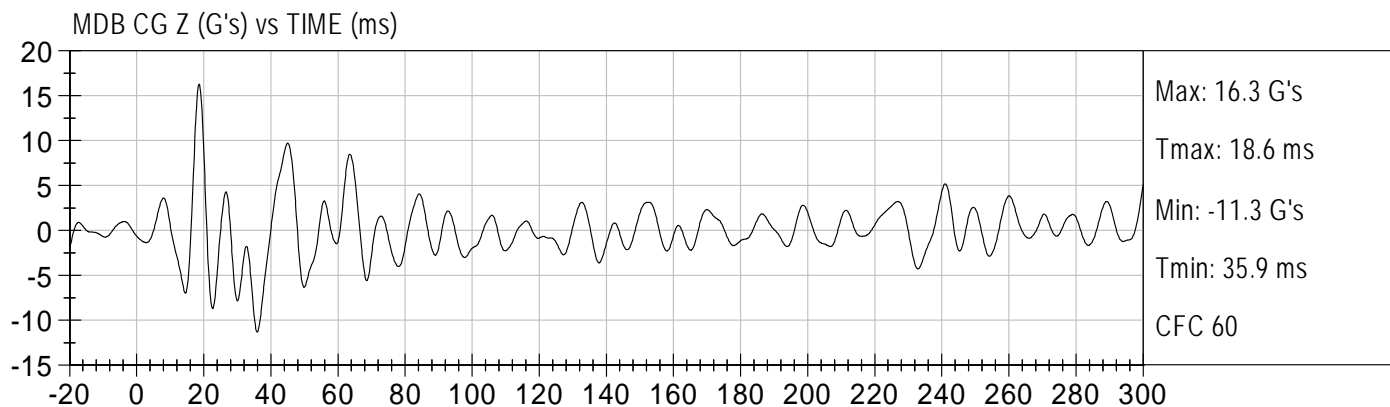
Test Date: 03/16/2010  
Speed: 32.8 mph (52.8 km/h)

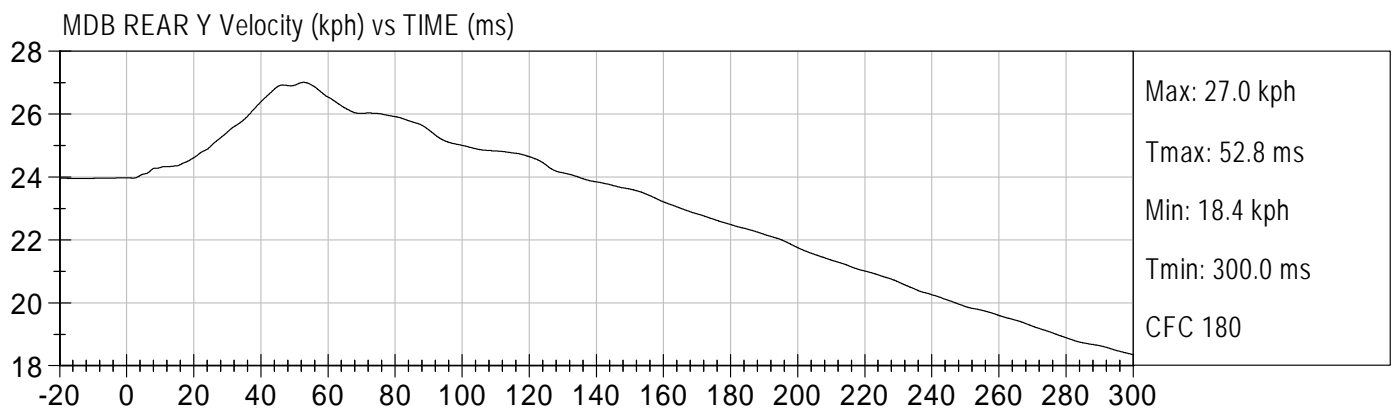
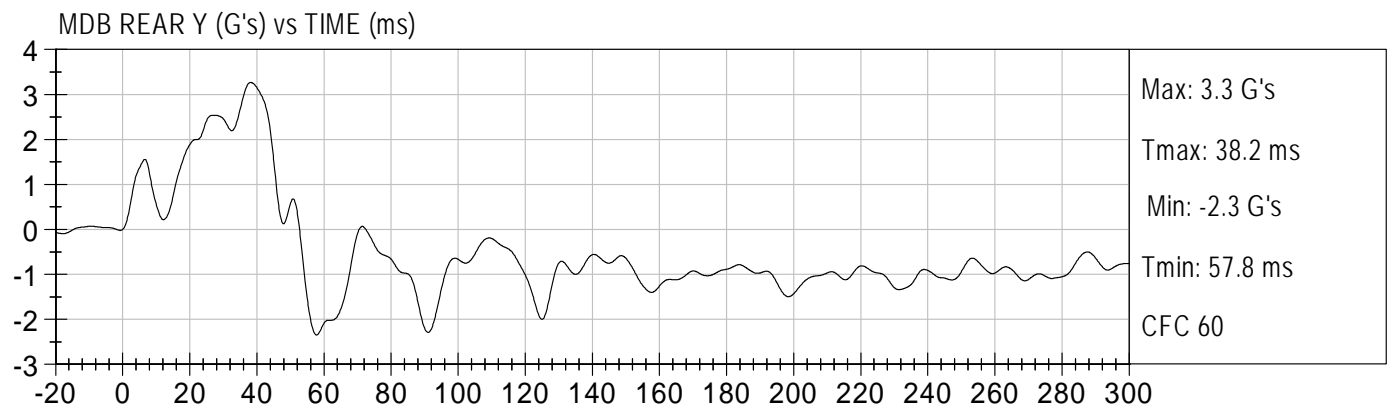
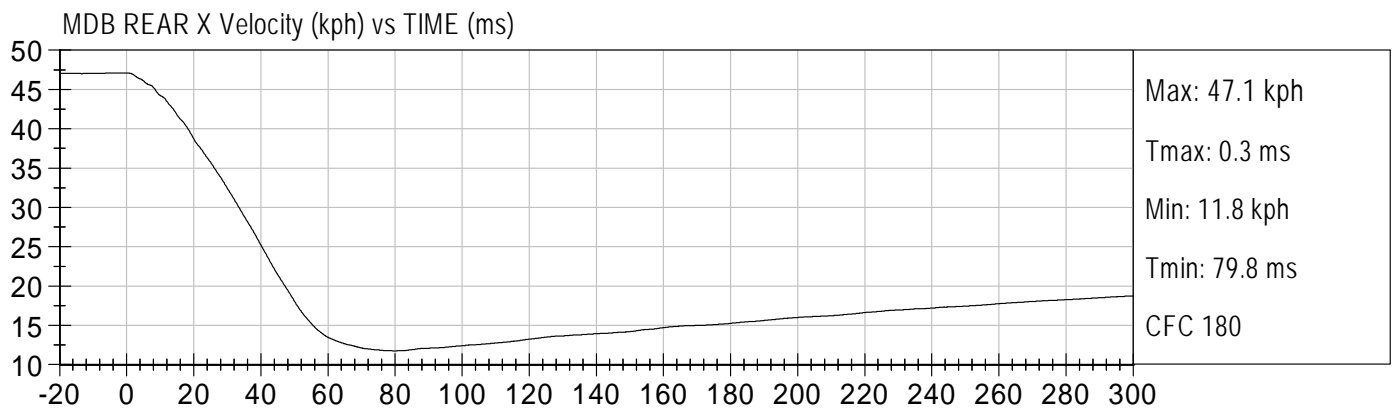
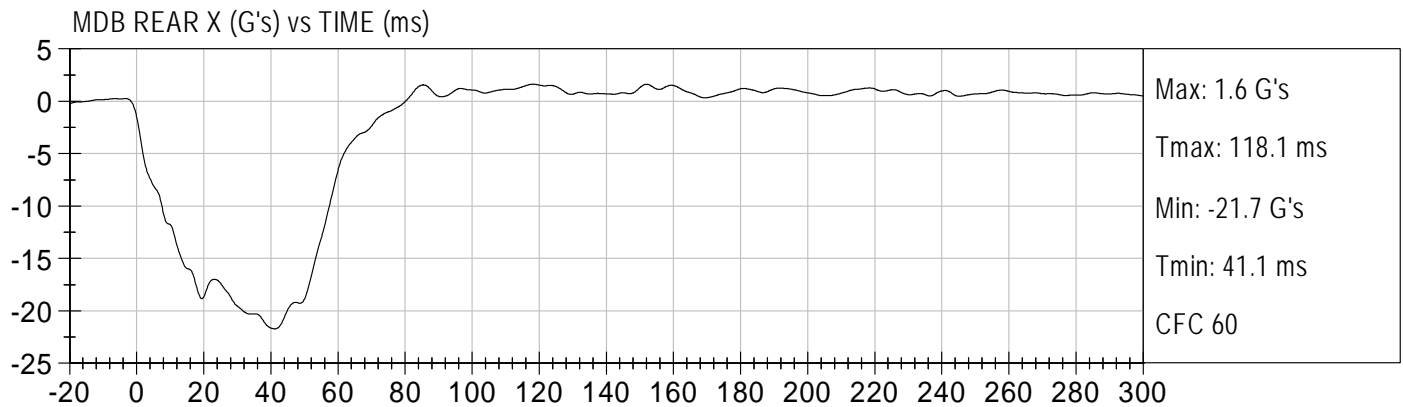




48/24 90° Side Impact  
2010 Ford Taurus SE - CA0206

Test Date: 03/16/2010  
Speed: 32.8 mph (52.8 km/h)







## **APPENDIX E**

### **ES-2re PERFORMANCE CALIBRATION TEST DATA**

**MGA RESEARCH CORPORATION**  
**HEAD DROP TEST**  
**ES-2re DUMMY**

**ATD Serial No:** 016

**Test ID:** D10381

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	22.0	Pass
Laboratory Relative Humidity	%	10 to 70	18	Pass
Peak Resultant Acceleration	G's	125 to 155	148	Pass
Peak Lateral Acceleration	G's	+/- 15	6	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 15% of peak	Yes	Pass
Overall Test Results				Pass

  
Laboratory Technician

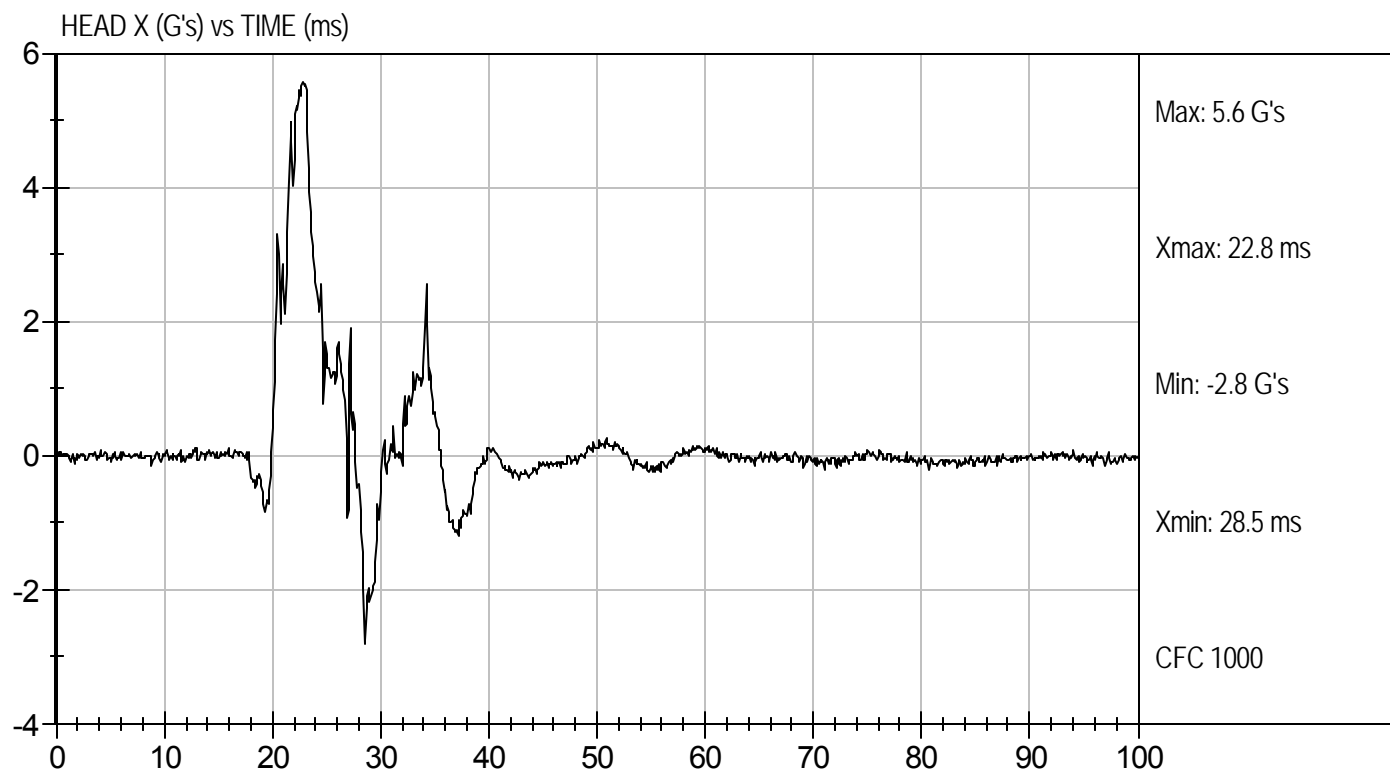
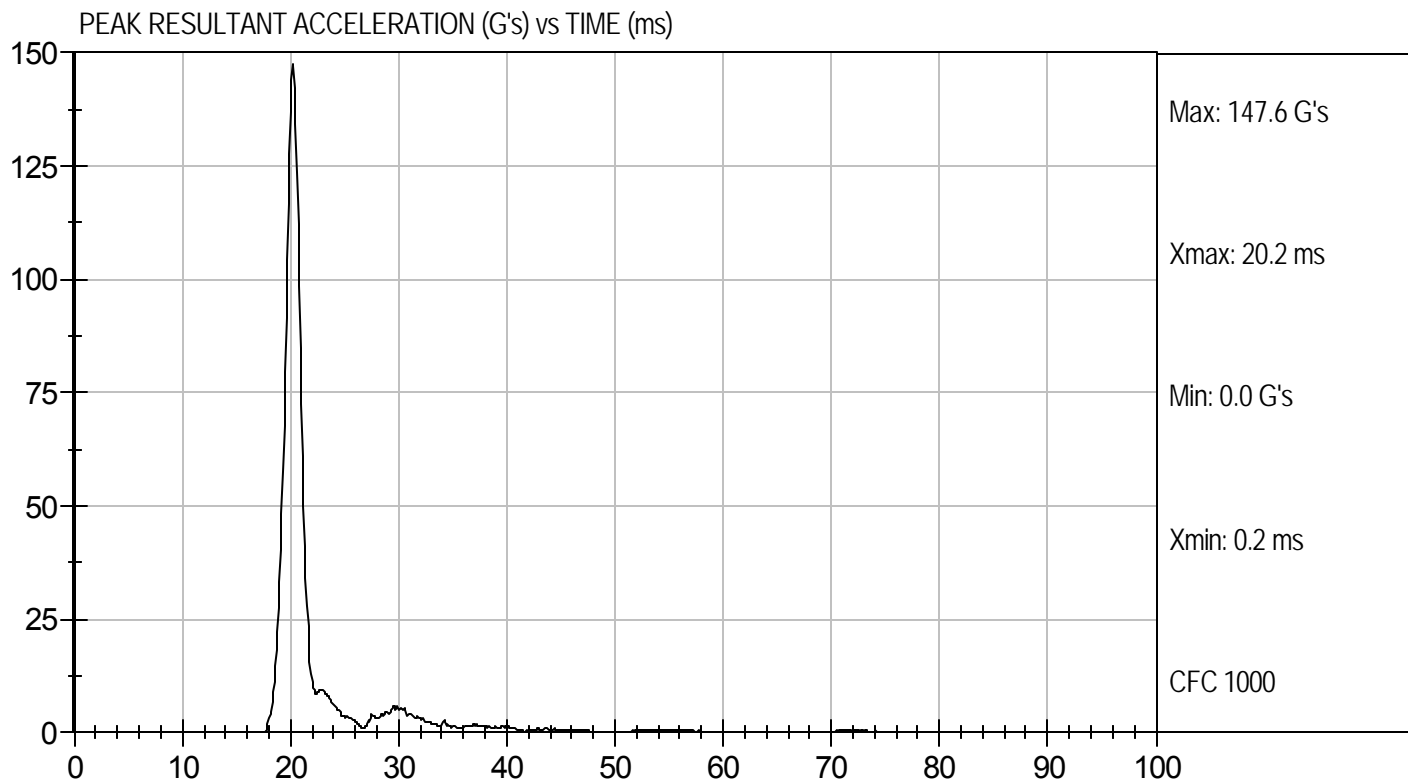
02/10/2010  
Test Date

  
Approved By



Test Desc: Head Drop  
Component ID: D10381

Test Date: 02/10/2010  
Velocity: 0 ft/s, 0 m/s



**MGA RESEARCH CORPORATION**  
**NECK PENDULUM TEST**  
**ES-2re DUMMY**


**ATD Serial No:** 016

**Test I.D:** D10382

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	18.0 to 22.0	22.0	Pass
Laboratory Relative Humidity		%	10 to 70	18	Pass
Pendulum Speed		m/s	3.3 to 3.5	3.5	Pass
Pendulum Deceleration	1 ms	m/s	0.00 to -0.05	-0.02	Pass
	3 ms	m/s	-0.25 to -0.375	-0.33	Pass
	14 ms	m/s	-3.20 to -3.70	-3.31	Pass
Maximum Flexion Angle		deg	49.0 to 59.0	52.4	Pass
Time of Maximum Flexion Angle		ms	54.0 to 66.0	56.6	Pass
Head Rotation Decay Time to 0 degree		ms	53.0 to 88.0	56.4	Pass
Overall Test Results					Pass

  
 Laboratory Technician

02/10/2010  
 Test Date

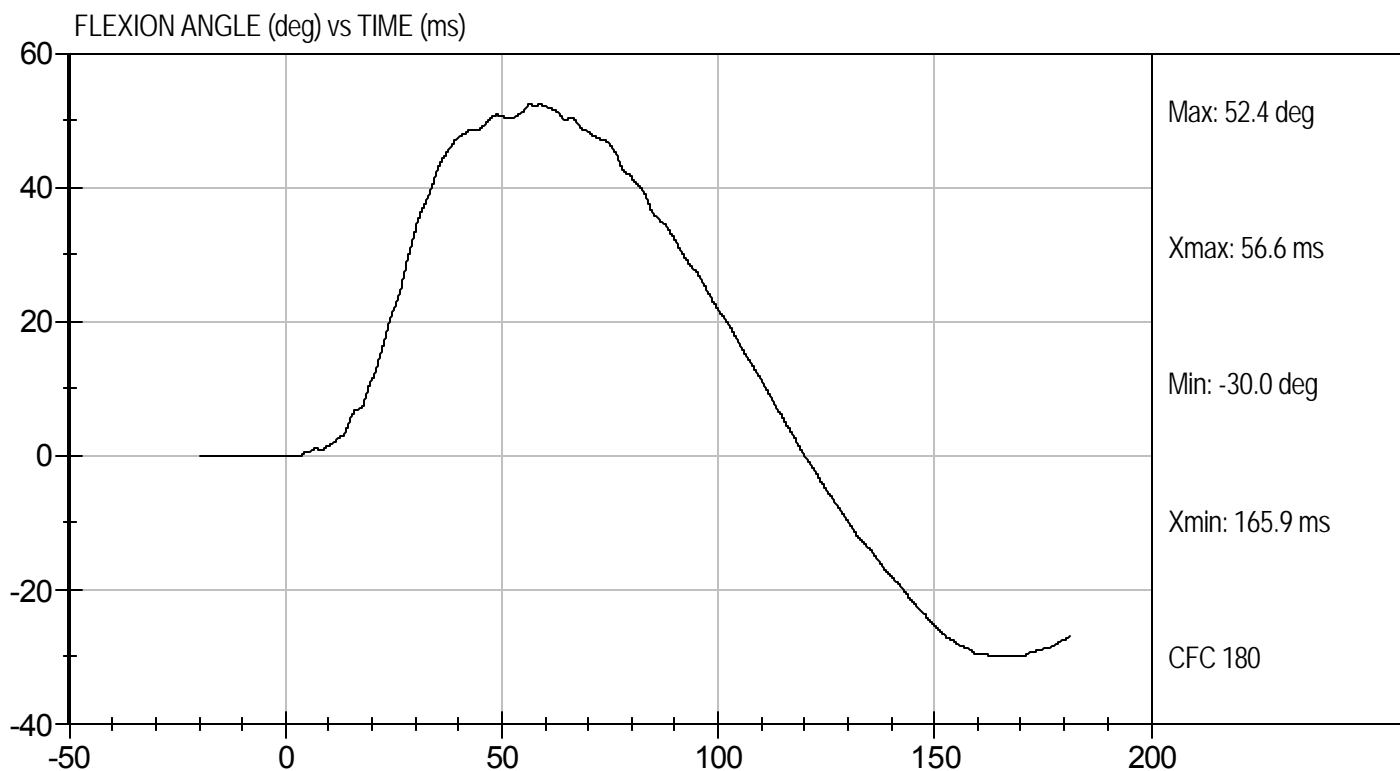
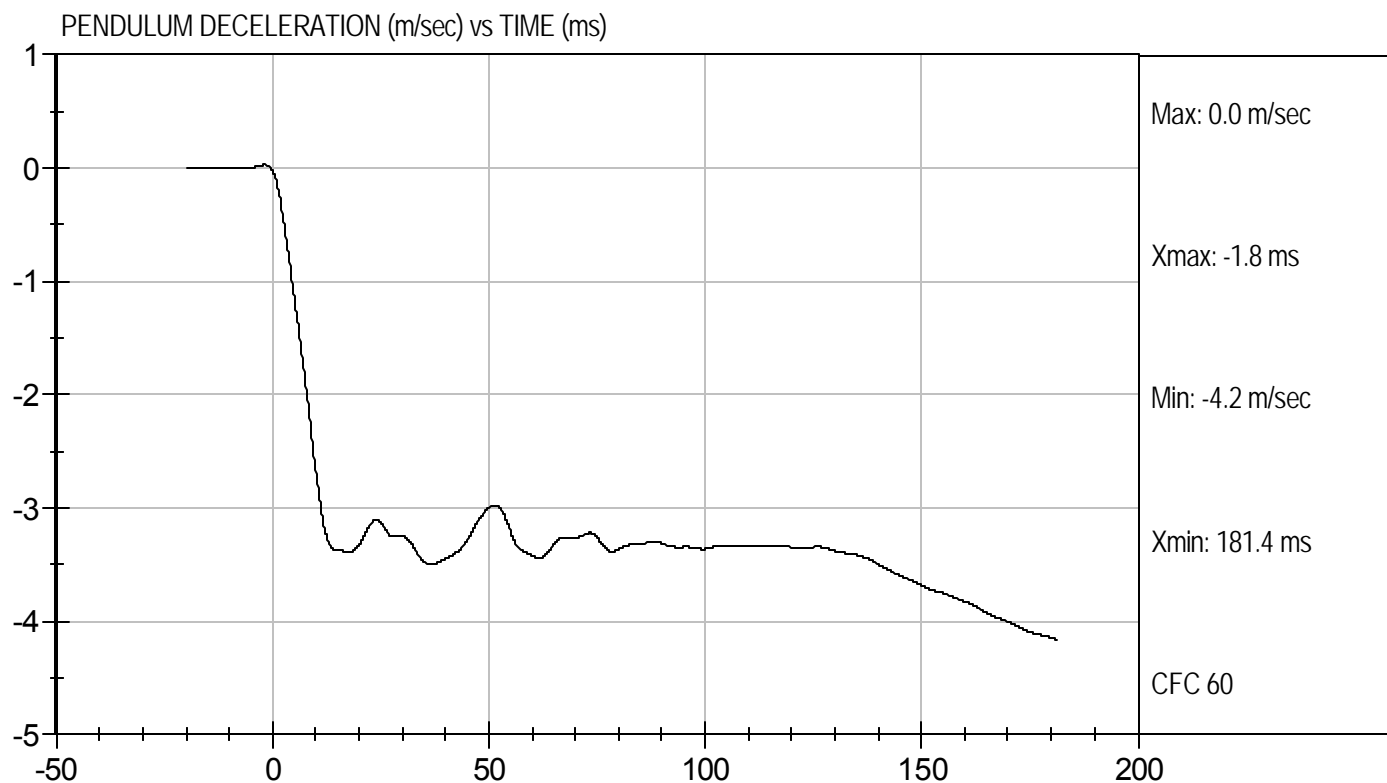
  
 Approved By





Test Desc: Neck Bending  
Component ID: D10382

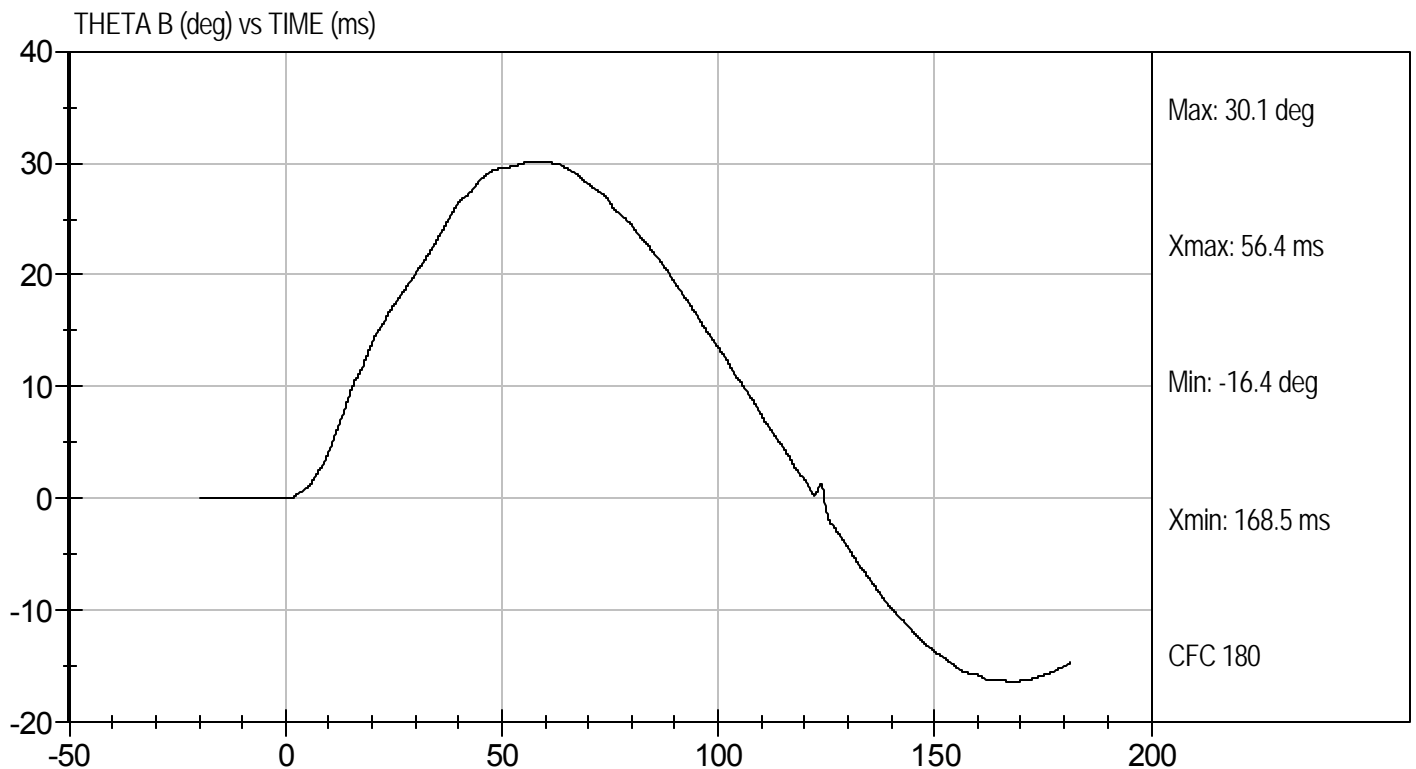
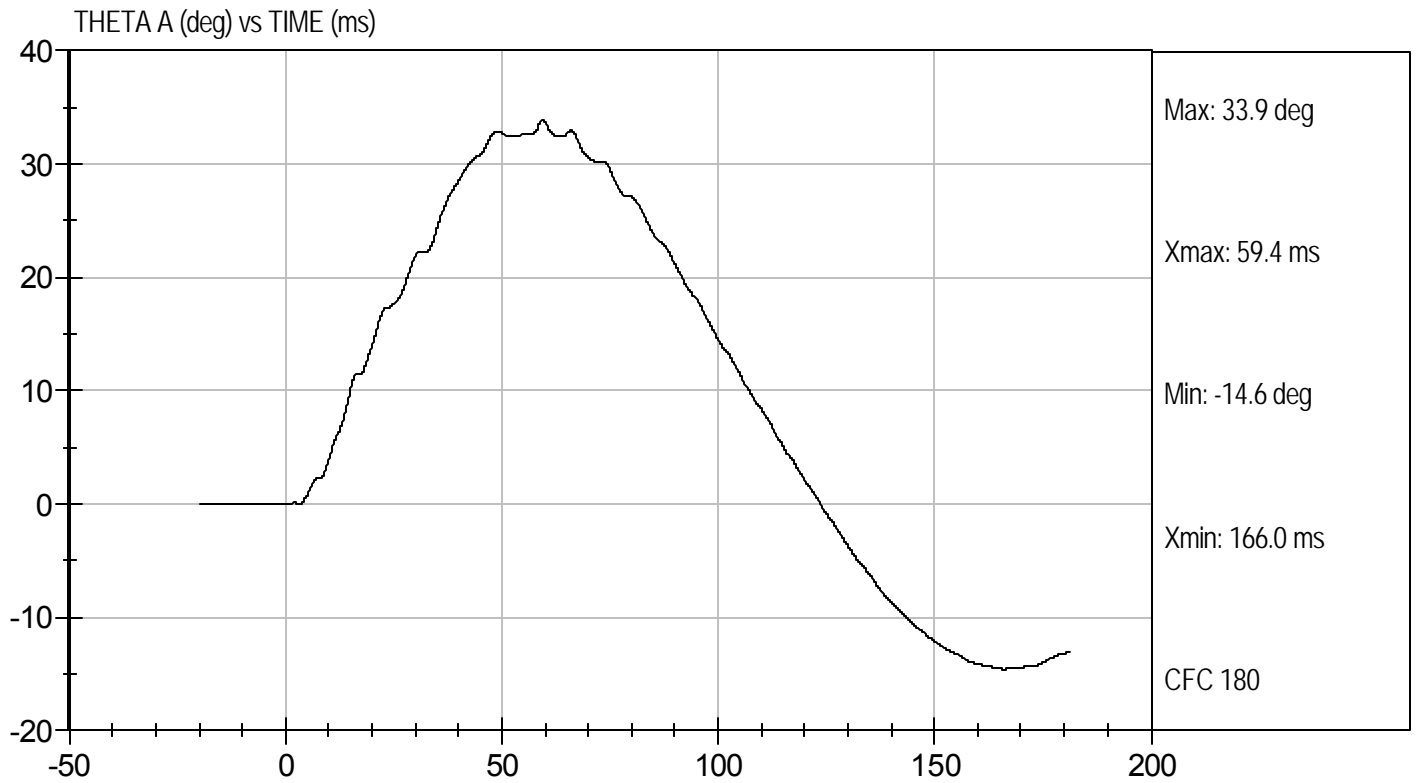
Test Date: 02/10/2010  
Velocity: 11.33 ft/s, 3.5 m/s





Test Desc: Neck Bending  
Component ID: D10382

Test Date: 02/10/2010  
Velocity: 11.33 ft/s, 3.5 m/s



**MGA RESEARCH CORPORATION**  
**SHOULDER IMPACT TEST**  
**ES-2re DUMMY**


**ATD Serial No:** 016

**Test I.D:** D10383

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	22.0	Pass
Laboratory Relative Humidity	%	10 to 70	17	Pass
Pendulum Speed	m/s	4.2 to 4.4	4.2	Pass
Peak Shoulder Acceleration	G's	7.5 to 10.5	9.5	Pass
Time of Peak Shoulder Acceleration	ms	NA	13.2	Pass
Overall Test Results			Pass	

  
Laboratory Technician

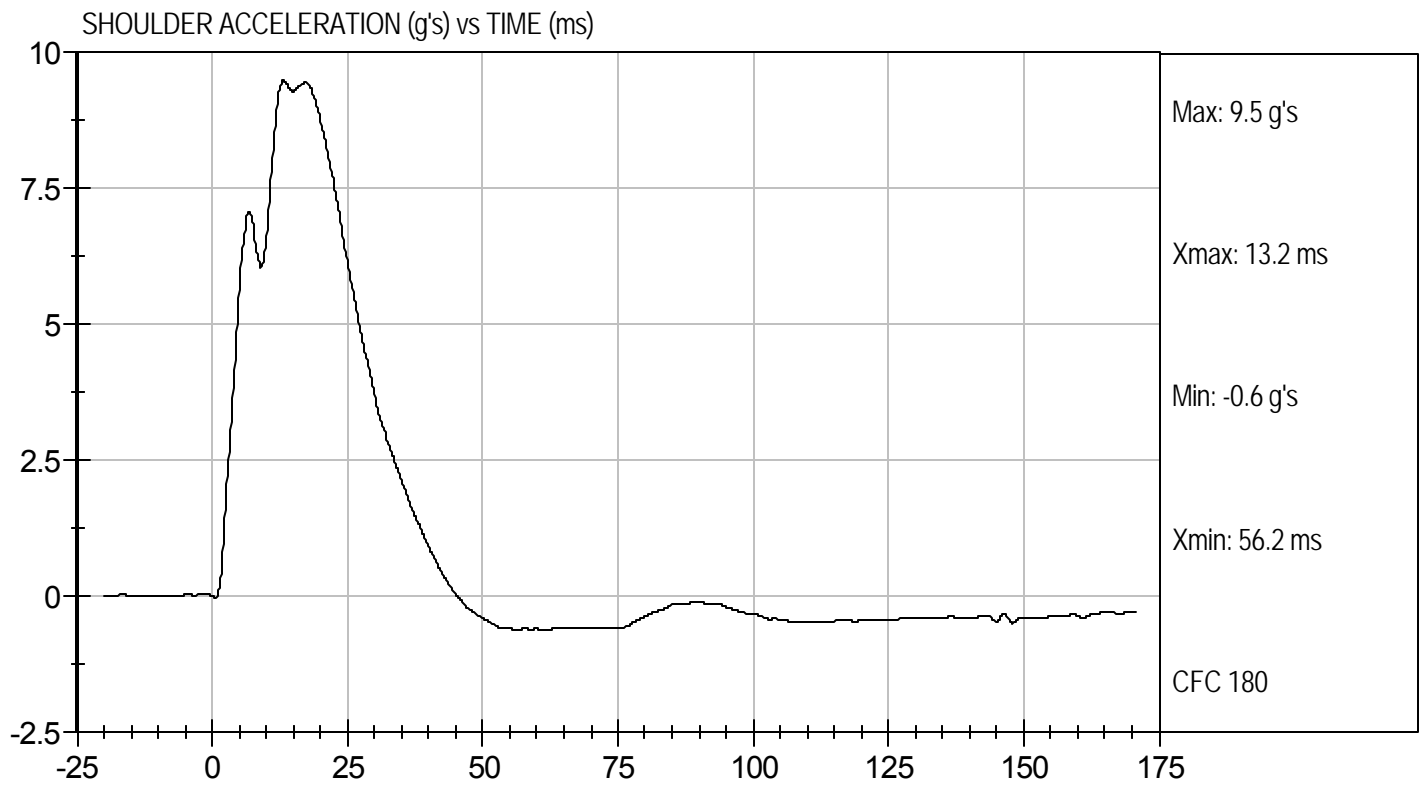
02/10/2010  
Test Date

  
Approved By



Test Desc: Shoulder Impact  
Component ID: D10383

Test Date: 02/10/2010  
Velocity: 13.89 ft/s, 4.2 m/s





**MGA RESEARCH CORPORATION**  
**UPPER RIB TEST**  
**ES-2re DUMMY**


**ATD Serial No:** 016

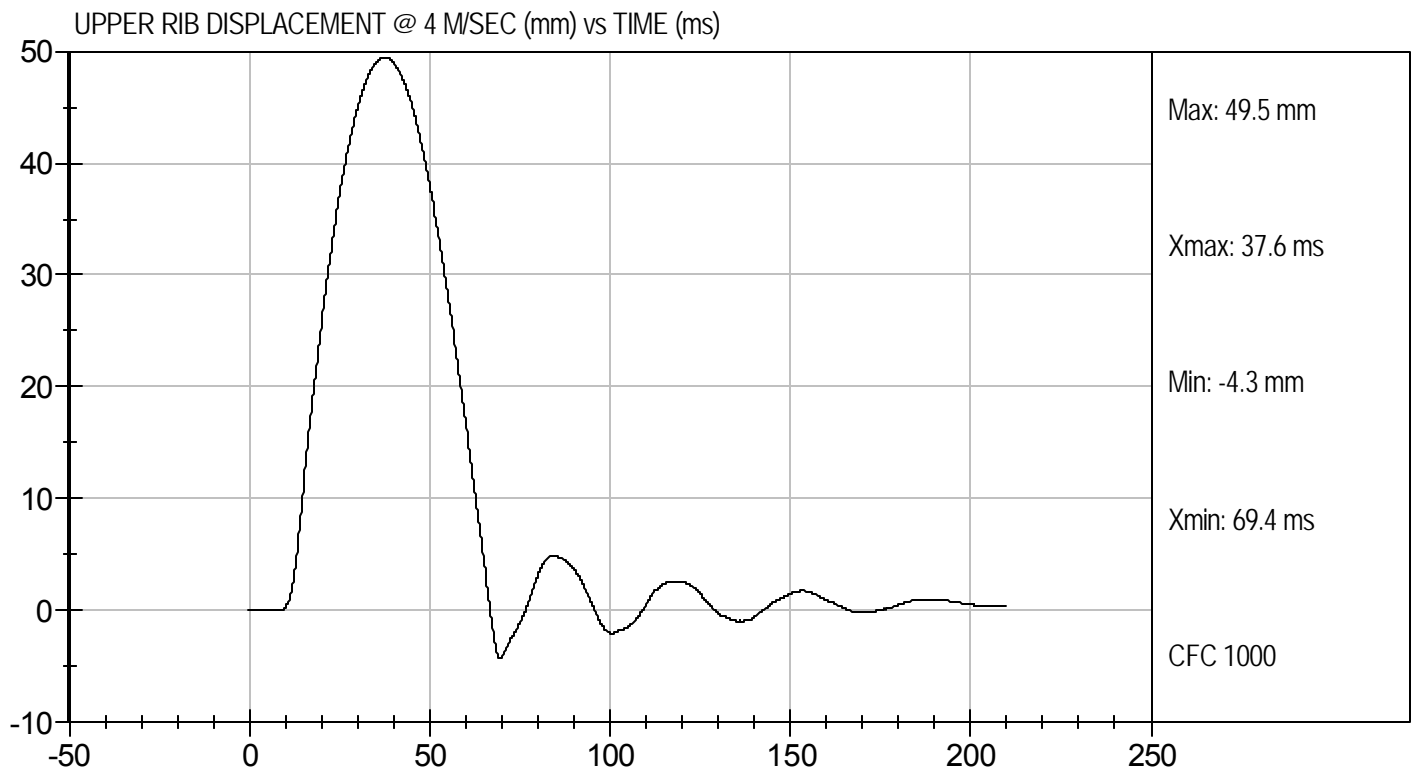
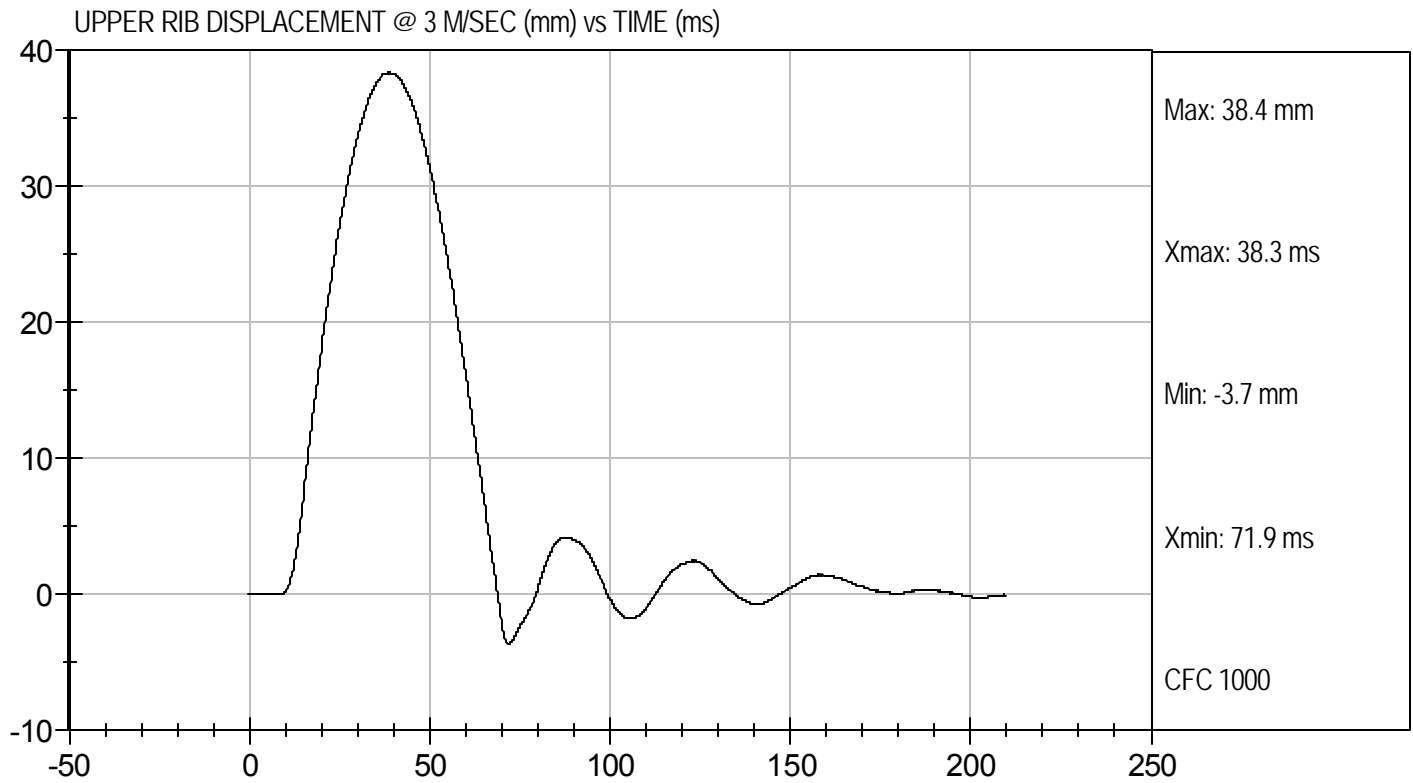
**Test I.D:** D10384

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	22.0	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Displacement at 3 m/s	mm	36.0 to 40.0	38.4	Pass
Displacement at 4 m/s	mm	46.0 to 51.0	49.5	Pass
			Overall Test Results	Pass

  
Laboratory Technician

02/09/2010  
Test Date

  
Approved By



**MGA RESEARCH CORPORATION**

**MID RIB TEST  
ES-2re DUMMY**


**ATD Serial No:** 016

**Test I.D:** D10385

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	17	Pass
Displacement at 3 m/s	mm	36.0 to 40.0	38.3	Pass
Displacement at 4 m/s	mm	46.0 to 51.0	49.6	Pass
Overall Test Results				Pass

  
Laboratory Technician

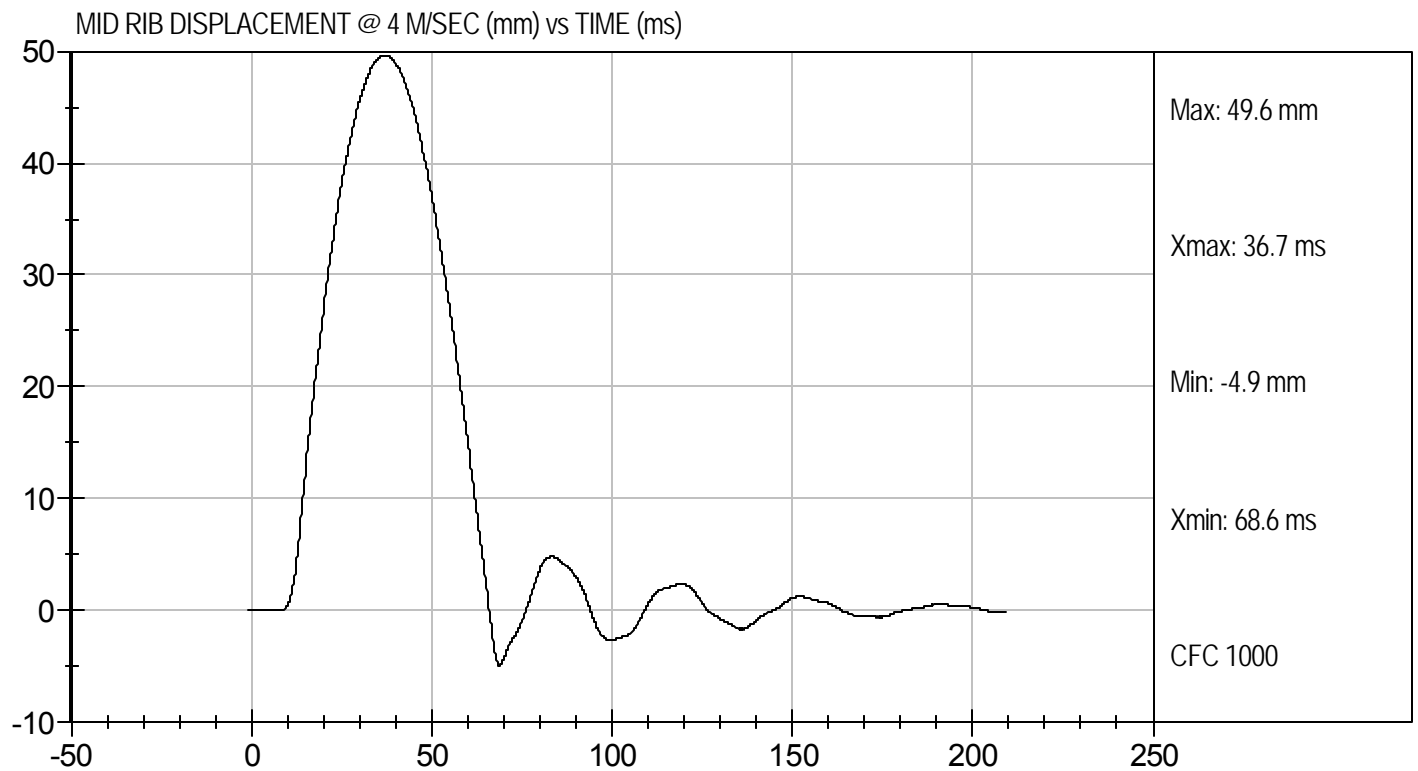
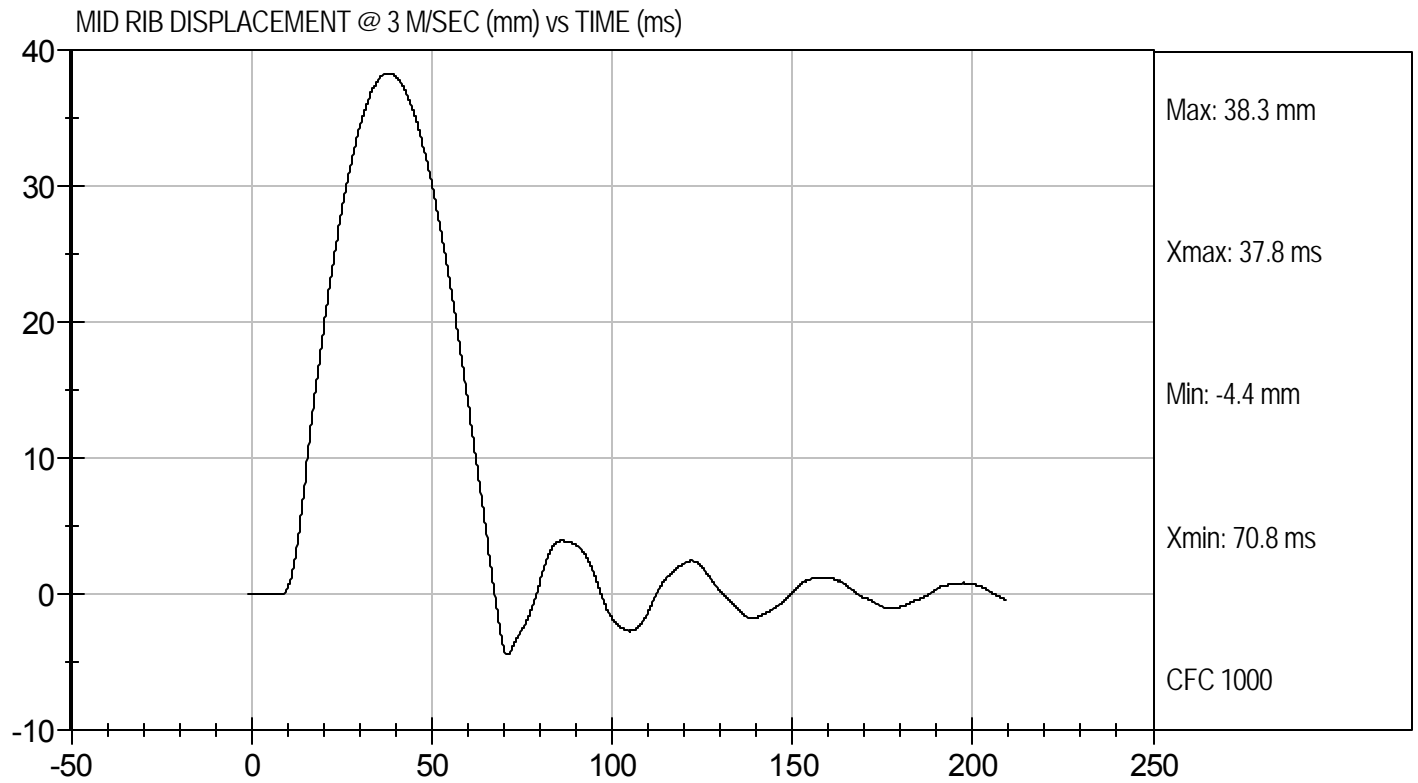
02/10/2010  
Test Date

  
Approved By



Test Desc: Rib Impact - Mid  
Component ID: D10385

Test Date: 2/10/10



**MGA RESEARCH CORPORATION**

**LOWER RIB TEST**

**ES-2re DUMMY**


**ATD Serial No:** 016

**Test I.D:** D10386

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	17	Pass
Displacement at 3 m/s	mm	36.0 to 40.0	37.1	Pass
Displacement at 4 m/s	mm	46.0 to 51.0	47.5	Pass
Overall Test Results				Pass

  
Laboratory Technician

02/10/2010  
Test Date

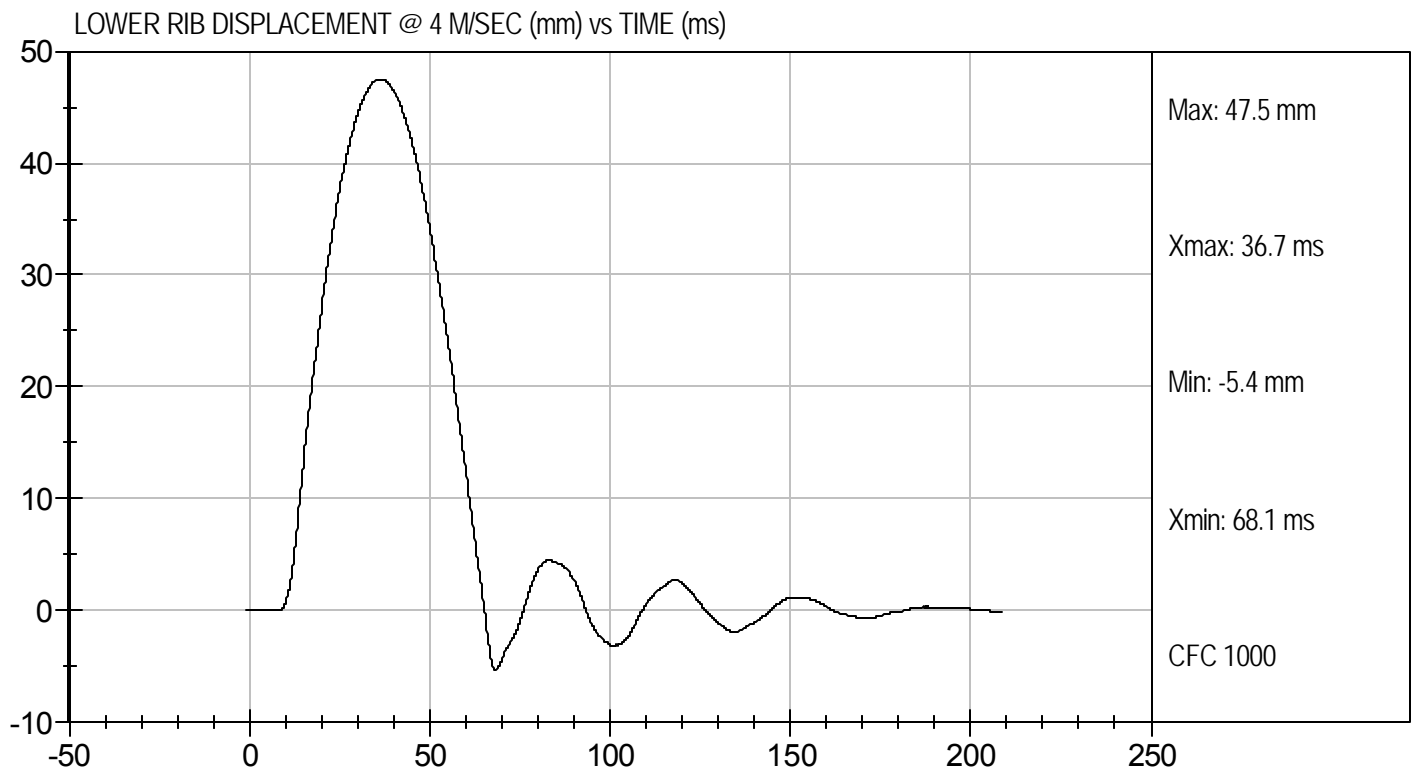
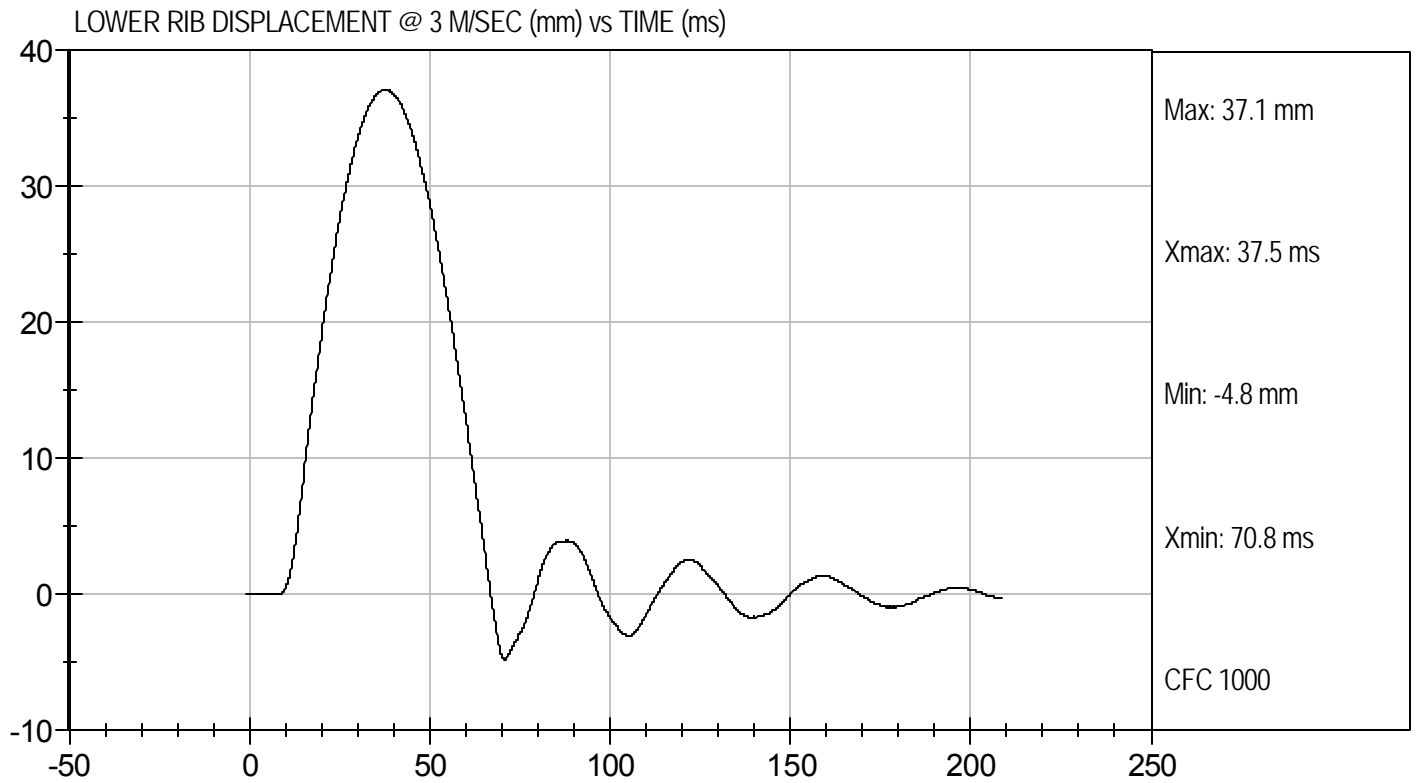
  
Approved By





Test Desc: Rib Impact - Lower  
Component ID: D10386

Test Date: 2/10/10



**MGA RESEARCH CORPORATION**

**ABDOMEN TEST**

**ES-2re DUMMY**


**ATD Serial No:** 016

**Test I.D:** D10387

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	22.0	Pass
Laboratory Relative Humidity	%	10 to 70	17	Pass
Probe Speed	m/s	3.90 to 4.10	3.97	Pass
Maximum Impact Force	kN	4.00 to 4.80	4.36	Pass
Time of Maximum Impactor Force	ms	10.60 to 13.00	10.90	Pass
Maximum Total Abdomen Force	kN	2.20 to 2.70	2.60	Pass
Time of Maximum Abdomen Force	ms	10.00 to 12.30	11.50	Pass
Overall Test Results				Pass

  
Laboratory Technician

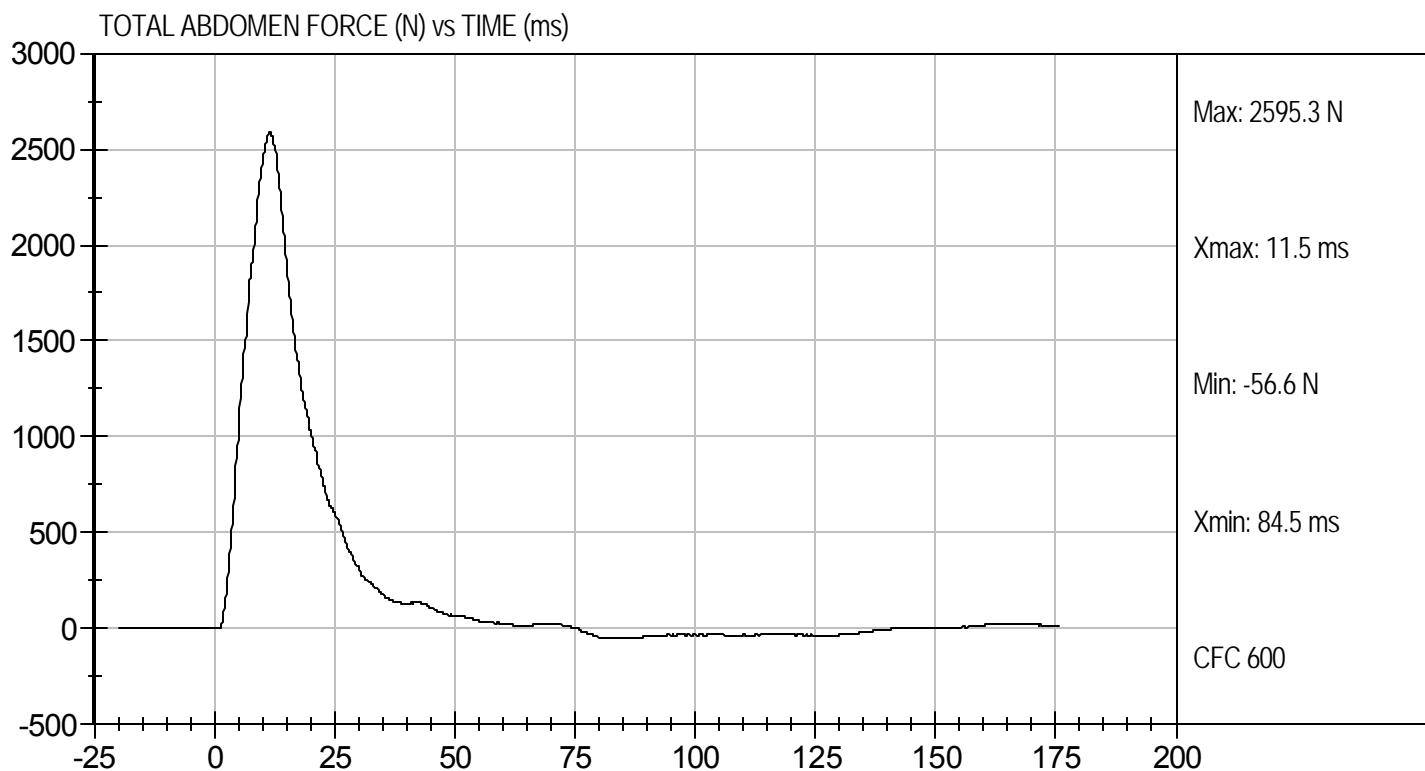
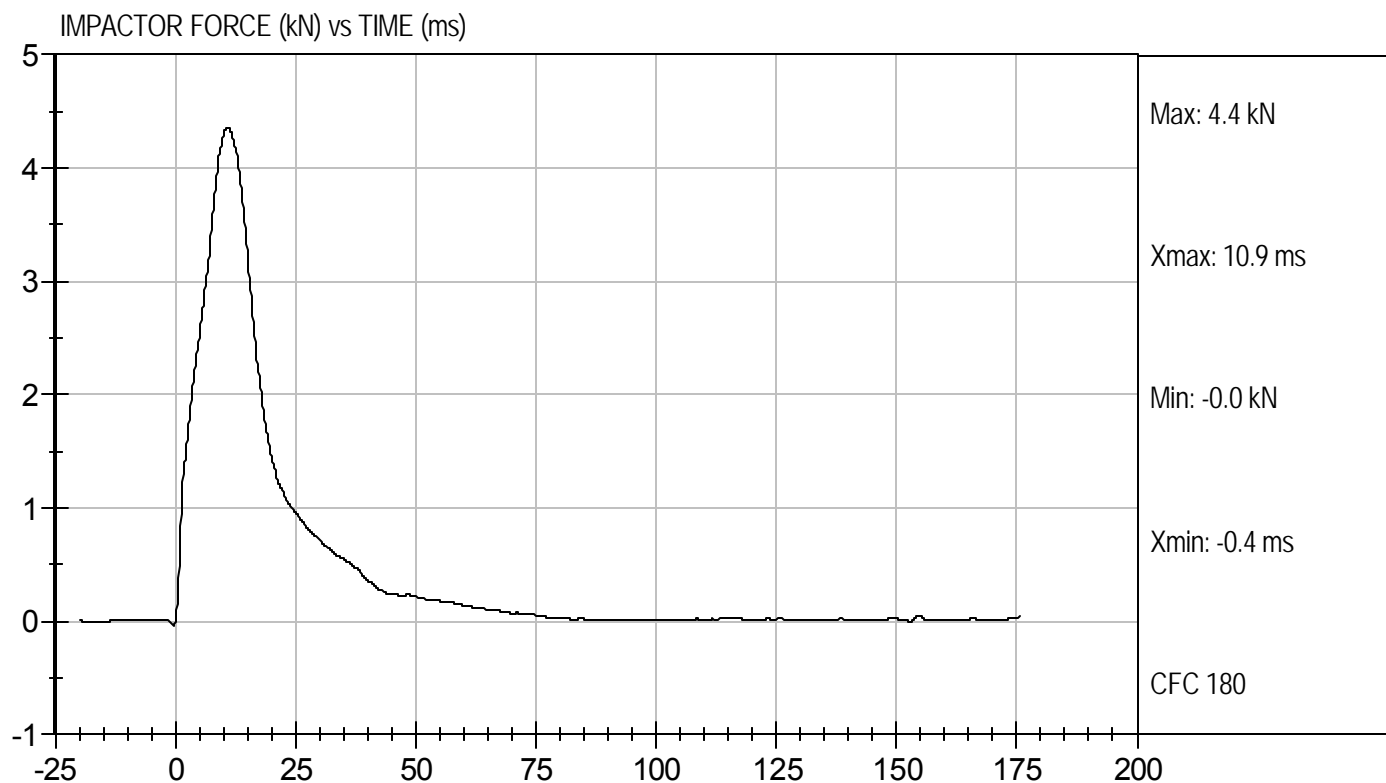
02/10/2010  
Test Date

  
Approved By



Test Desc: Abdomen Impact  
Component ID: D10387

Test Date: 02/10/2010  
Velocity: 13.02 ft/s, 3.97 m/s



**MGA RESEARCH CORPORATION**  
**LUMBAR SPINE TEST**  
**ES-2re DUMMY**

**ATD Serial No:** 016

**Test I.D:** D10388

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	22.0	Pass
Laboratory Relative Humidity		%	10 to 70	18	Pass
Pendulum Speed		m/s	5.95 to 6.15	6.12	Pass
Pendulum Deceleration	1 ms	m/s	-0.05 to 0.00	-0.03	Pass
	3.7 ms	m/s	-0.425 to -0.24	-0.41	Pass
	27 ms	m/s	-6.50 to -5.80	-5.93	Pass
	30 ms	m/s	>= -6.5	-5.87	Pass
Maximum Flexion Angle		deg	45.0 to 55.0	48.6	Pass
Time of Maximum Flexion Angle		ms	39.0 to 53.0	43.9	Pass
Headform Rotation Decay to Initial Position		ms	37 to 57	43	Pass
Overall Results				Pass	

  
 Laboratory Technician

02/10/2010  
 Test Date

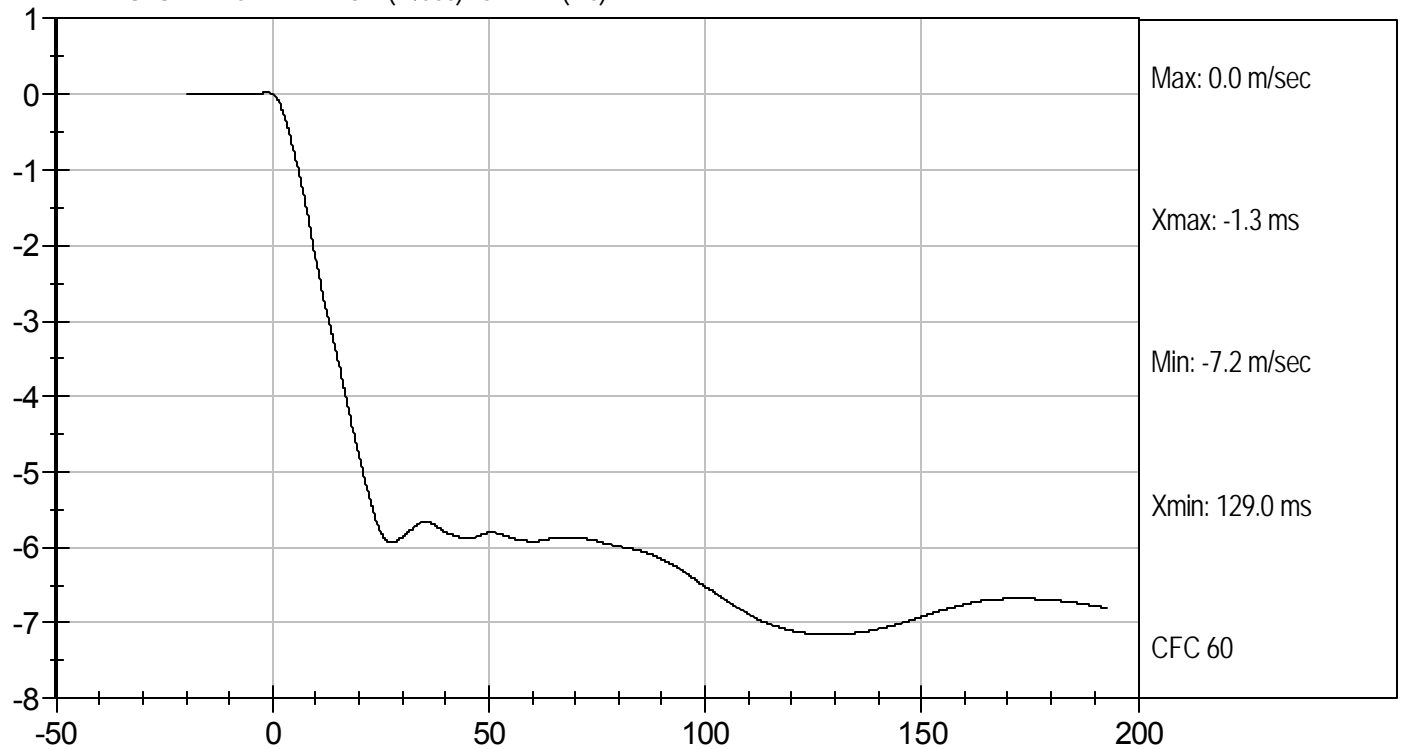
  
 Approved By



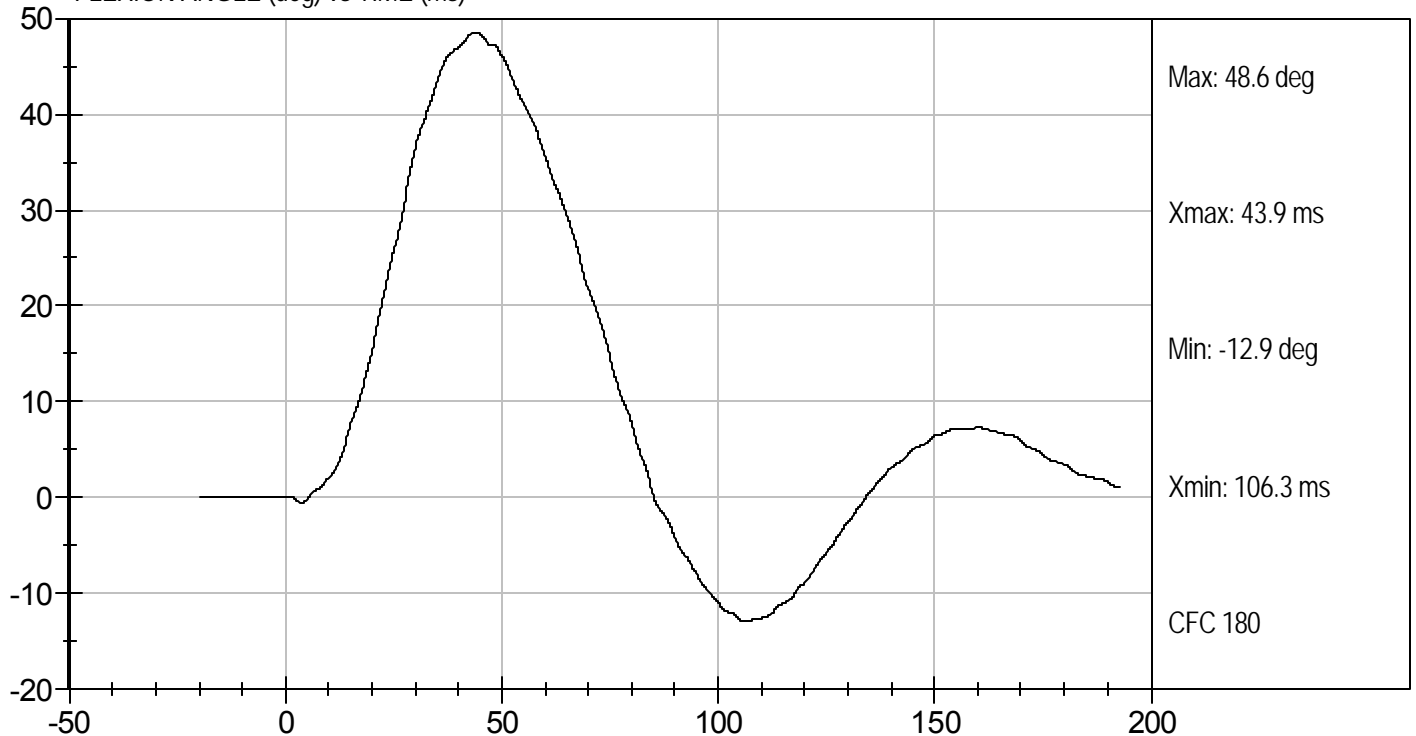
Test Desc: Lumbar Bending  
Component ID: D10388

Test Date: 02/10/2010  
Velocity: 20.08 ft/s, 6.12 m/s

PENDULUM DECELERATION (m/sec) vs TIME (ms)



FLEXION ANGLE (deg) vs TIME (ms)

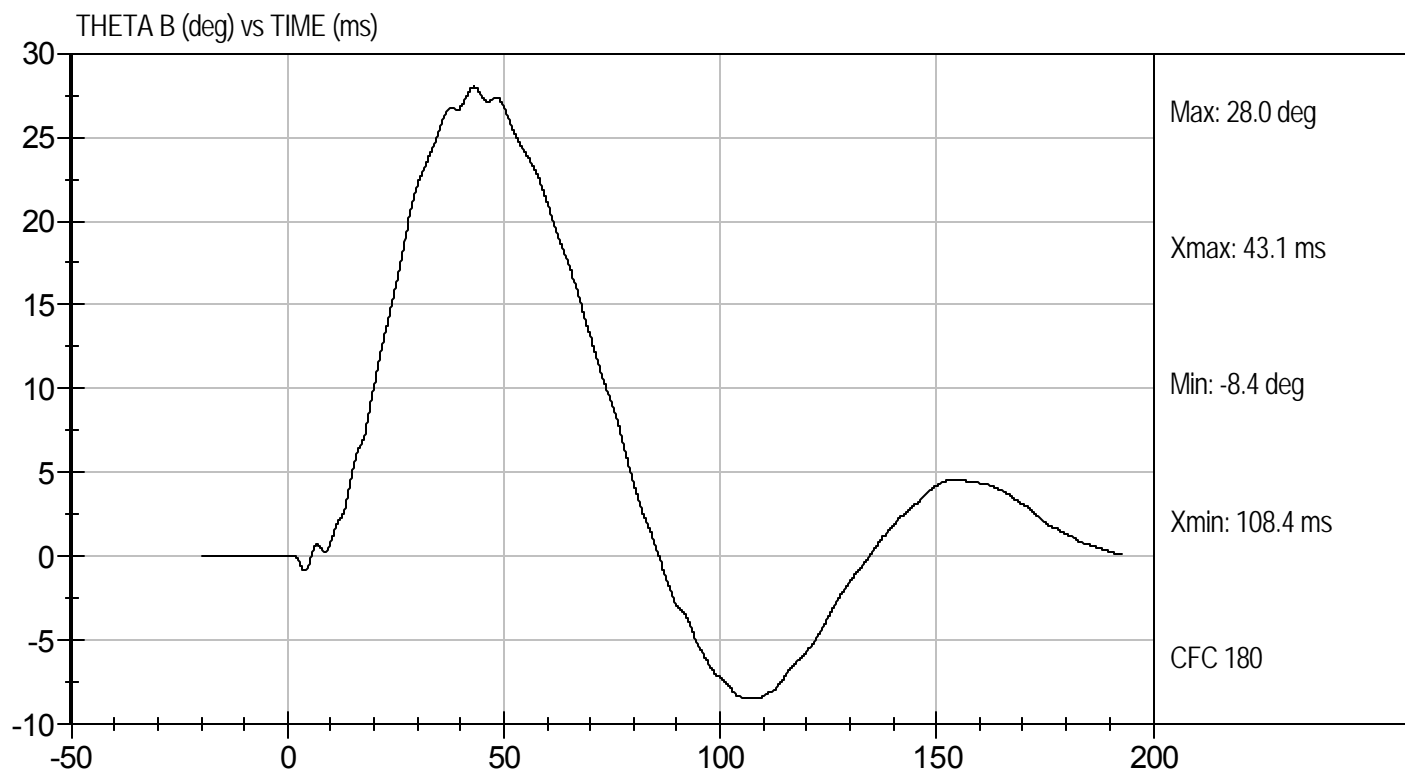
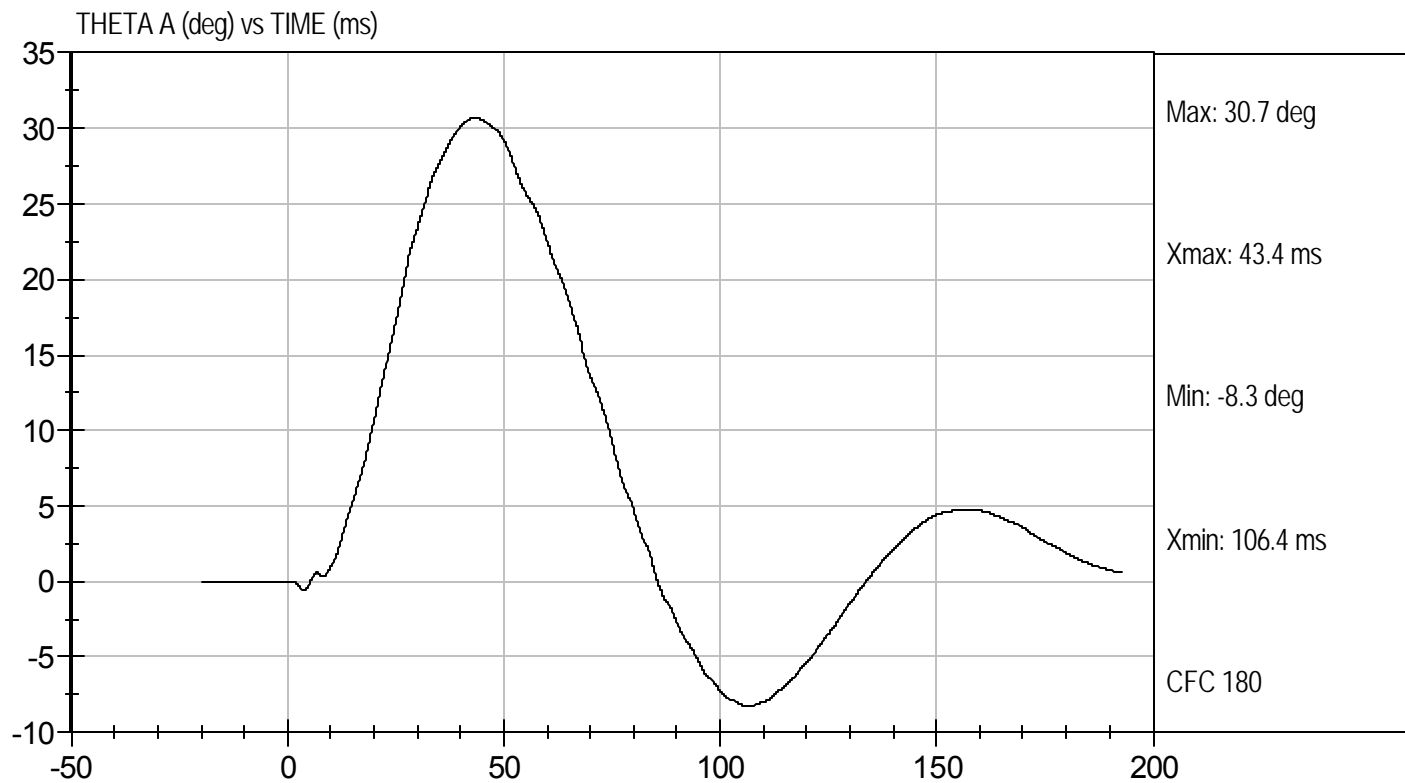






Test Desc: Lumbar Bending  
Component ID: D10388

Test Date: 02/10/2010  
Velocity: 20.08 ft/s, 6.12 m/s



**MGA RESEARCH CORPORATION**

**PELVIS TEST  
ES-2re DUMMY**

**ATD Serial No:** 016

**Test I.D:** D10389

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	22.0	Pass
Laboratory Relative Humidity	%	10 to 70	17	Pass
Probe Speed	m/s	4.20 to 4.40	4.27	Pass
Maximum Impactor Force	kN	4.70 to 5.40	4.79	Pass
Time of Maximum Impactor Force	ms	11.80 to 16.10	13.40	Pass
Maximum Pubic Force	kN	1.23 to 1.59	1.33	Pass
Time of Maximum Pubic Force	ms	12.20 to 17.00	14.10	Pass
Overall Test Results				Pass

  
Laboratory Technician

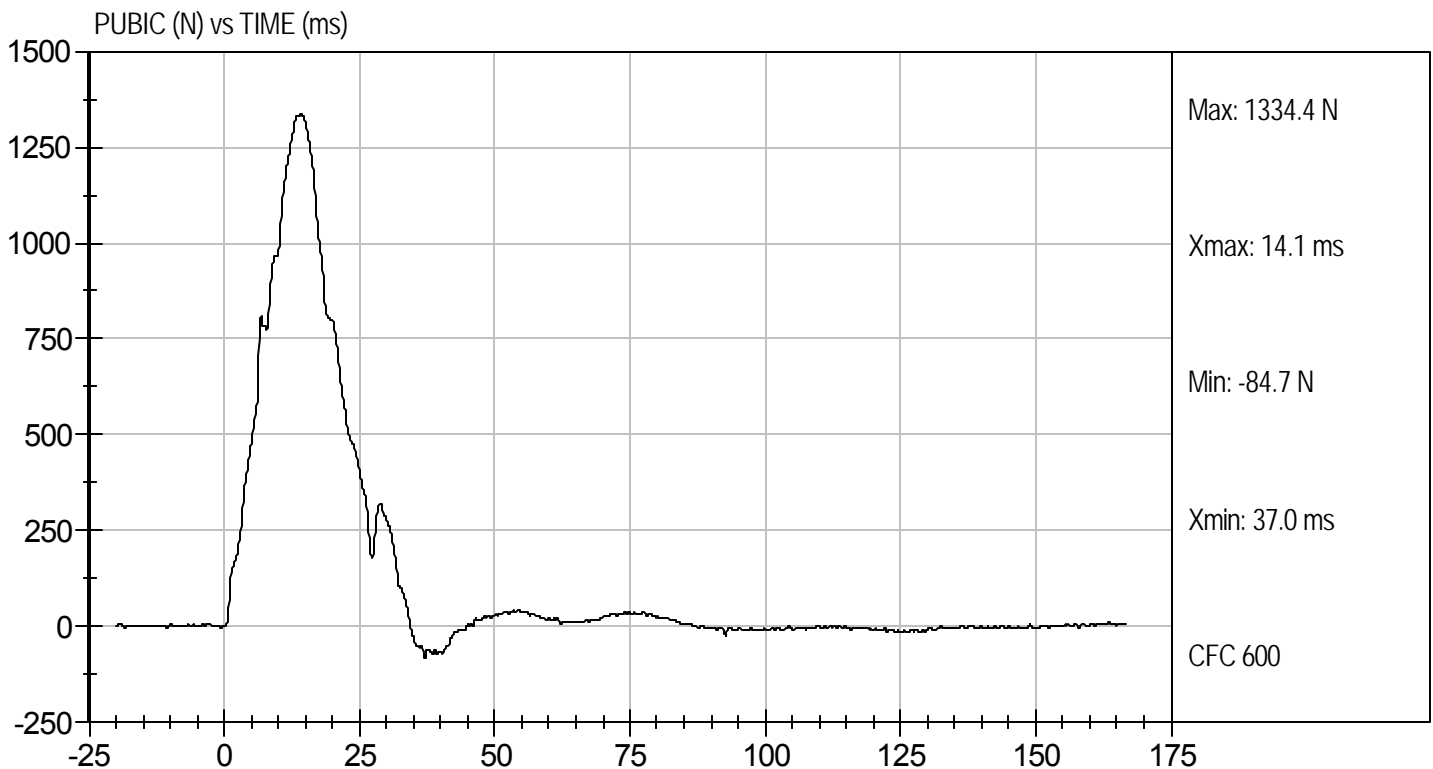
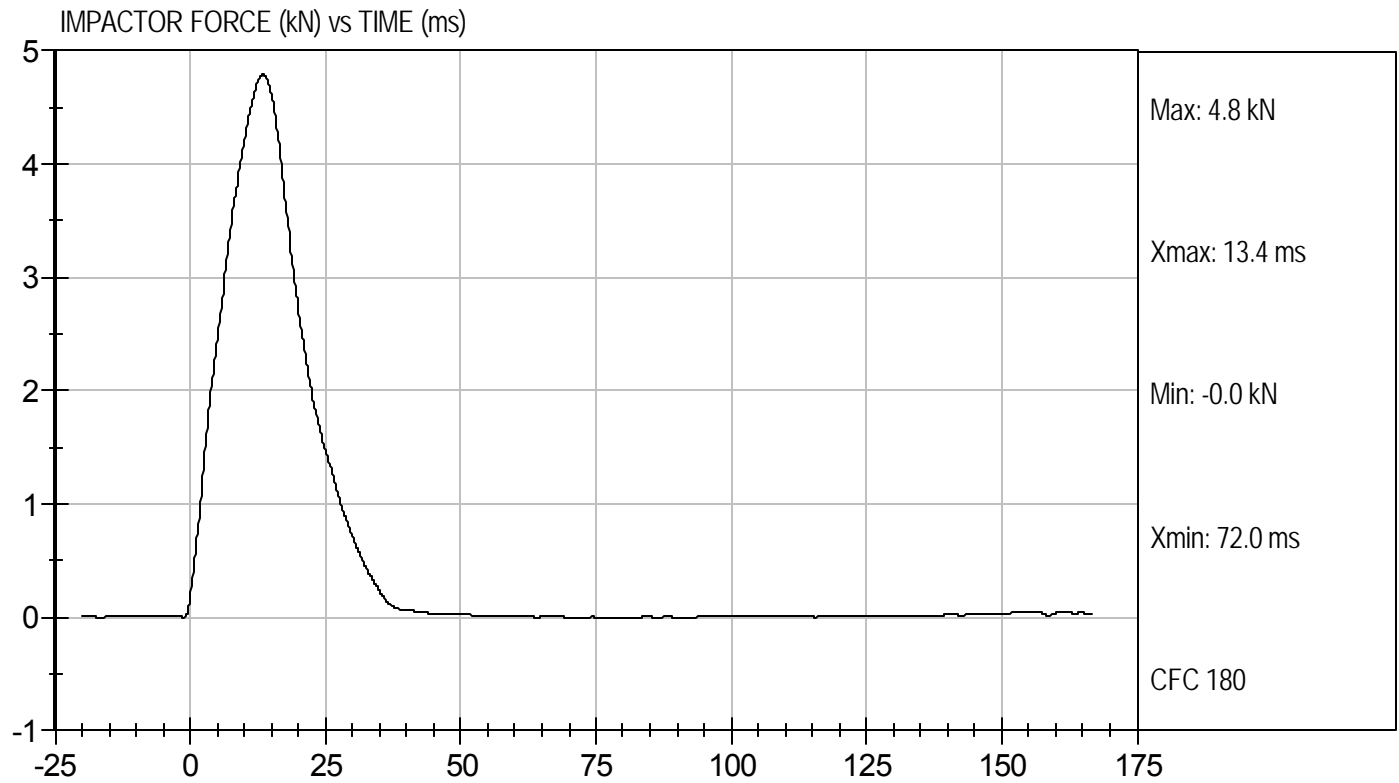
02/10/2010  
Test Date

  
Approved By



Test Desc: Pelvis Impact  
Component ID: D10389

Test Date: 02/10/2010  
Velocity: 14.01 ft/s, 4.27 m/s



**MGA RESEARCH CORPORATION**  
**FULL BODY THORAX IMPACT TEST**  
**ES-2re DUMMY**

**ATD Serial No:** 016

**Test I.D:** D10380

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	18	Pass
Probe Speed	m/s	5.40 to 5.60	5.46	Pass
Maximum Impactor Force (after 6 ms)	kN	5.10 to 6.20	5.45	Pass
Upper Rib Displacement	mm	34.0 to 41.0	38.0	Pass
Middle Rib Displacement	mm	37.0 to 45.0	40.4	Pass
Lower Rib Displacement	mm	37.0 to 44.0	40.0	Pass
			Overall Test Results	Pass

  
Laboratory Technician

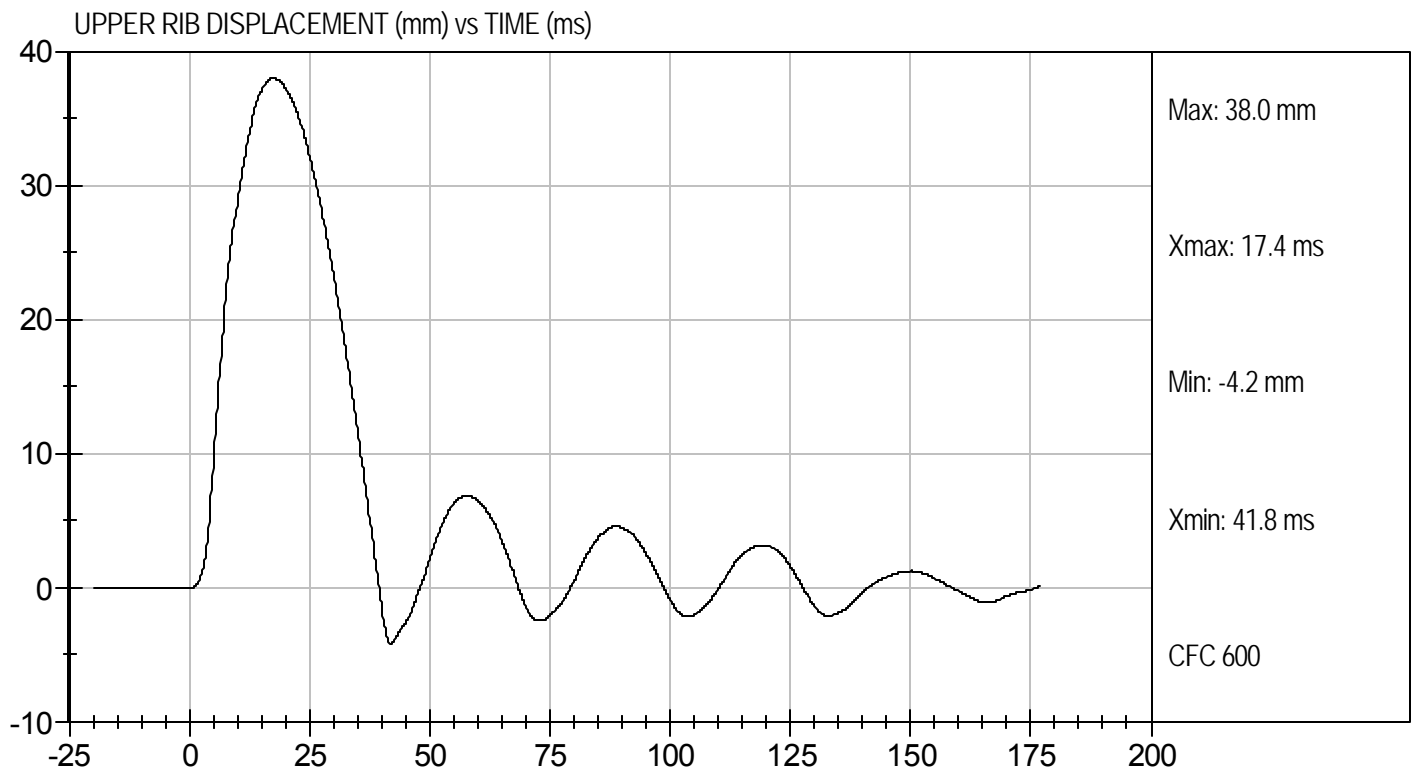
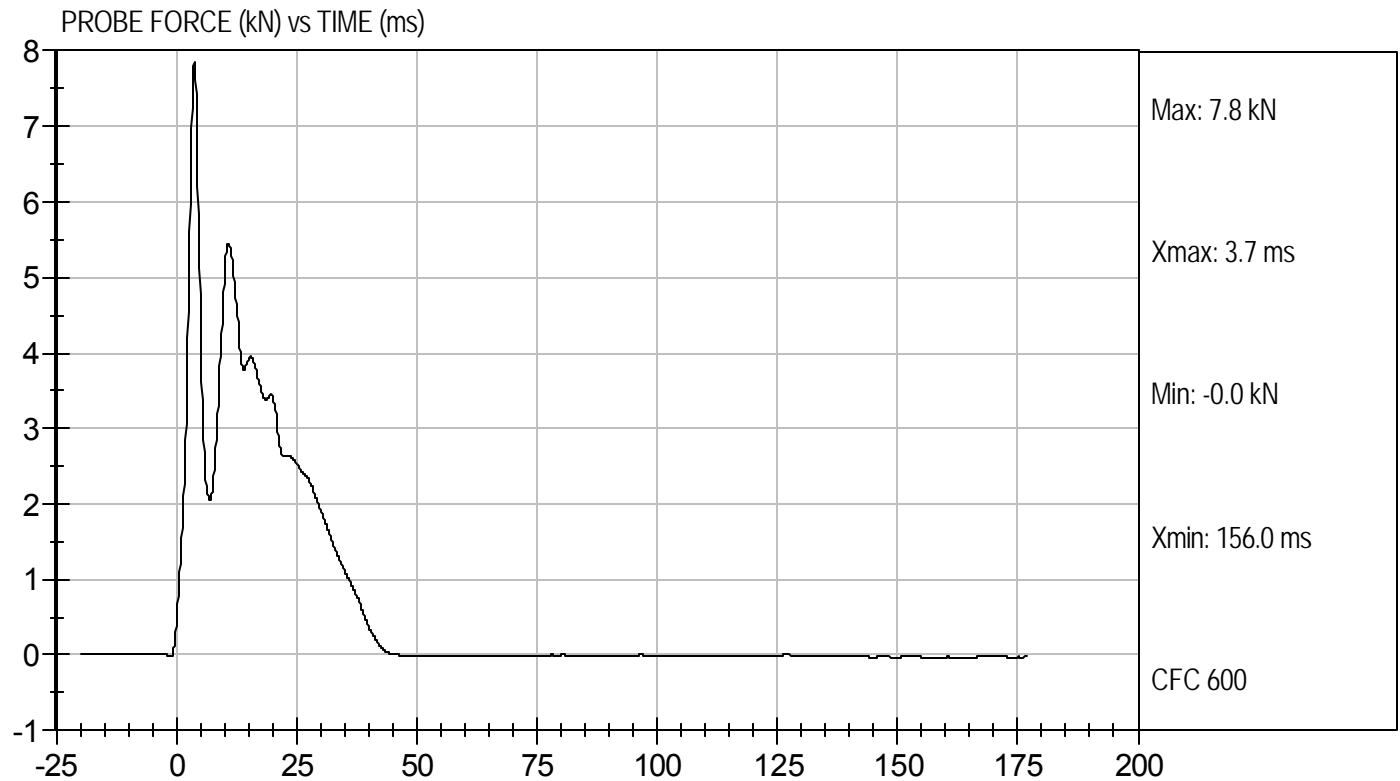
02/10/2010  
Test Date

  
Approved By



Test Desc: Thorax Impact  
Component ID: D10380

Test Date: 02/10/2010  
Velocity: 17.92 ft/s, 5.46 m/s

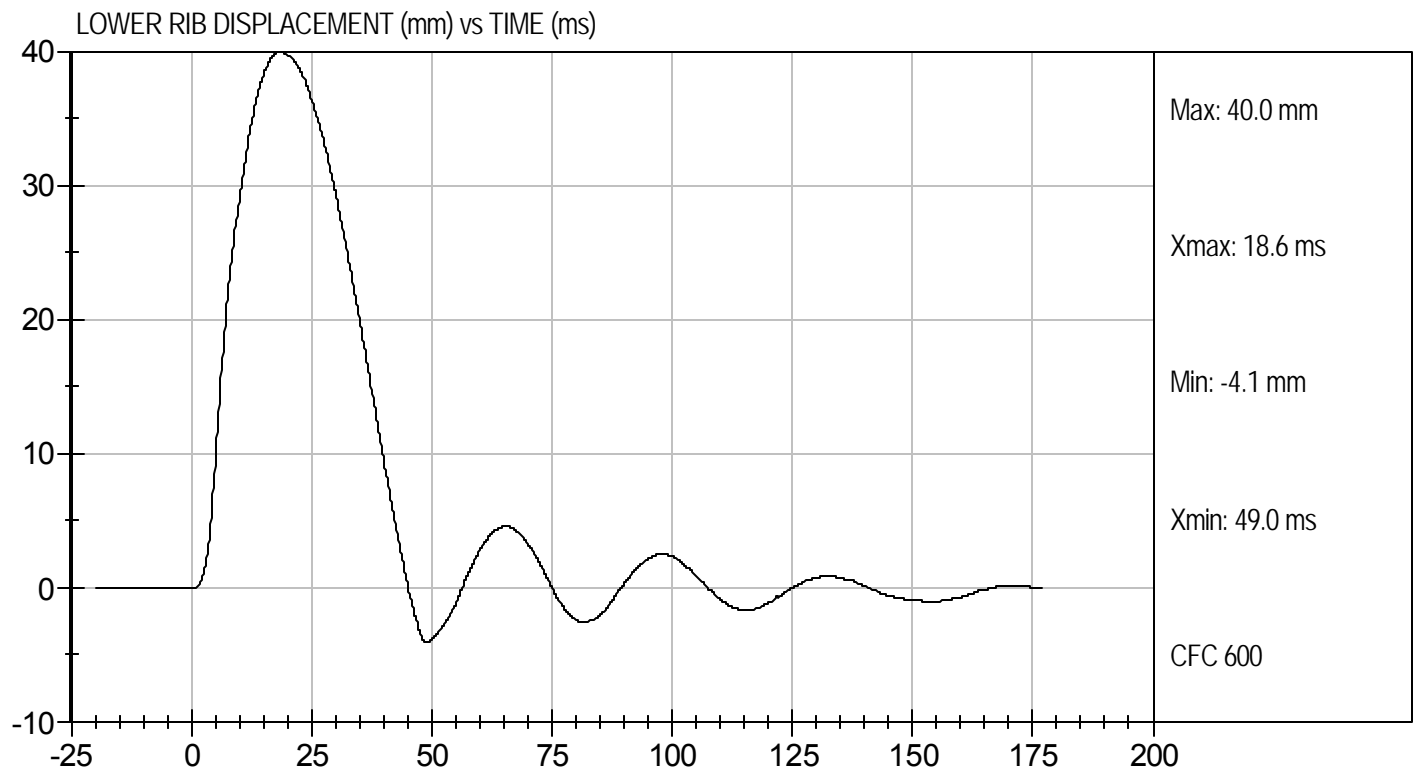
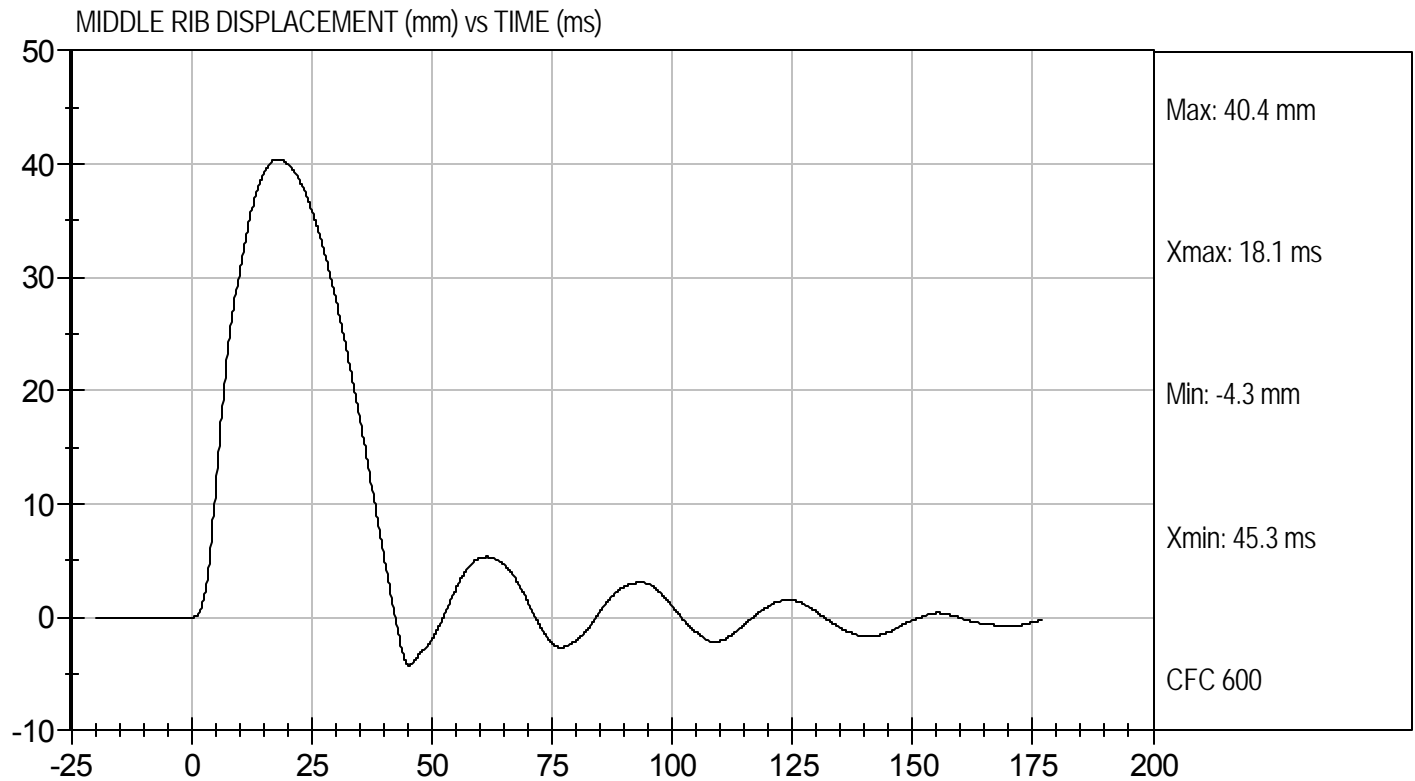






Test Desc: Thorax Impact  
Component ID: D10380

Test Date: 02/10/2010  
Velocity: 17.92 ft/s, 5.46 m/s



**MGA RESEARCH CORPORATION**  
**HEAD DROP TEST**  
**ES-2re DUMMY**


**ATD Serial No:** 016

**Test ID:** D10781

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Peak Resultant Acceleration	G's	125 to 155	150	Pass
Peak Lateral Acceleration	G's	+/- 15	-9	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 15% of peak	Yes	Pass
Overall Test Results				Pass

  
Laboratory Technician

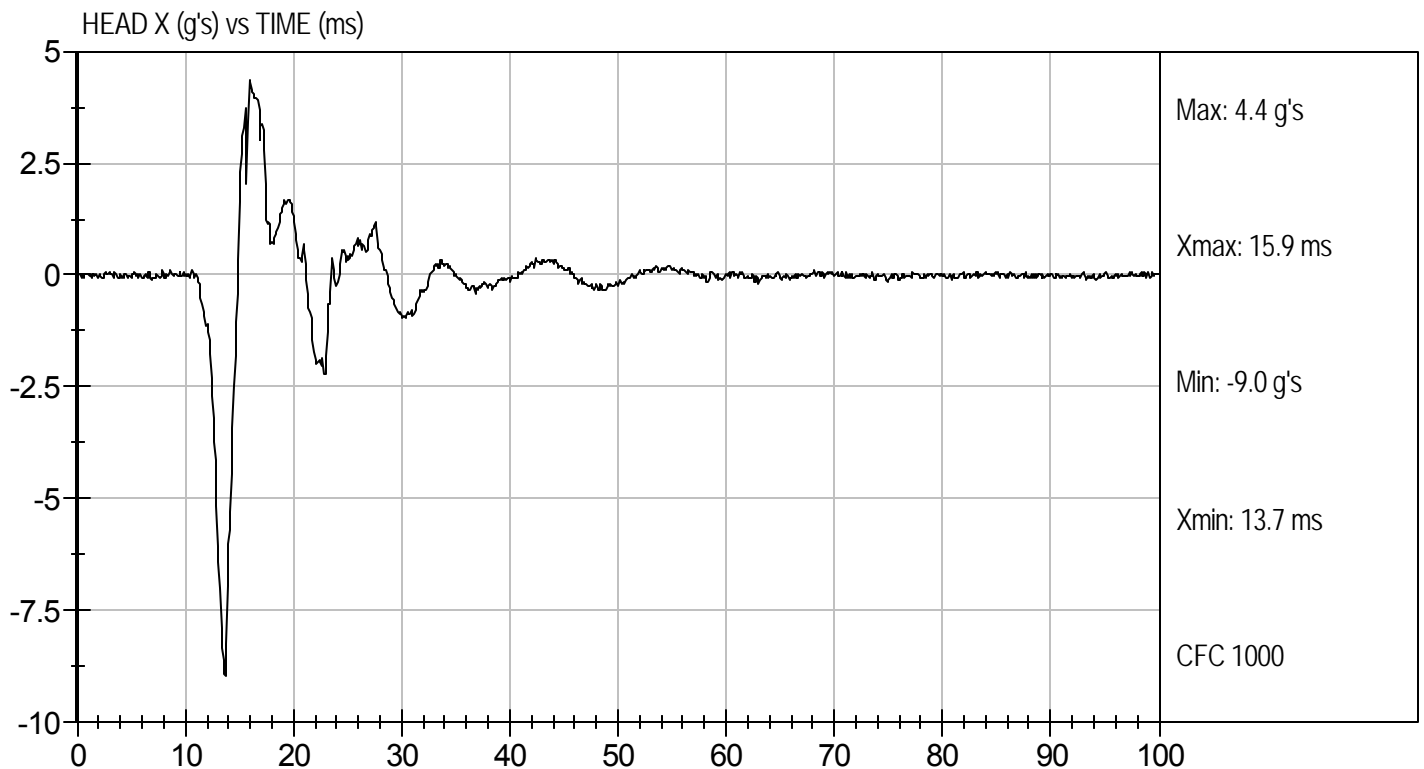
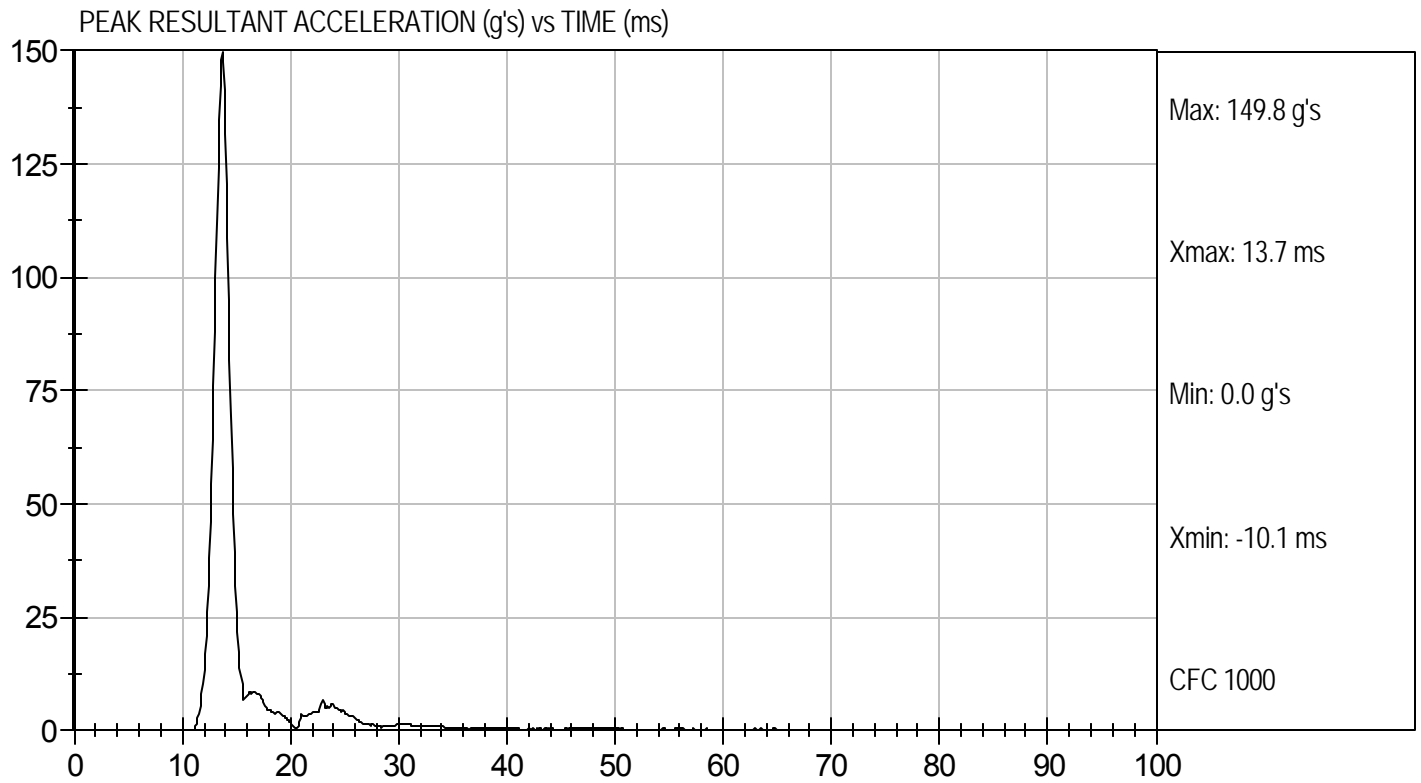
03/17/2010  
Test Date

  
Approved By



Test Desc: Head Drop  
Component ID: D10781

Test Date: 03/17/2010  
Velocity: 0 ft/s, 0 m/s



**MGA RESEARCH CORPORATION**  
**NECK PENDULUM TEST**  
**ES-2re DUMMY**

**ATD Serial No:** 016

**Test I.D:** D10782

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	18.0 to 22.0	21.9	Pass
Laboratory Relative Humidity		%	10 to 70	23	Pass
Pendulum Speed		m/s	3.3 to 3.5	3.4	Pass
Pendulum Deceleration	1 ms	m/s	0.00 to -0.05	-0.02	Pass
	3 ms	m/s	-0.25 to -0.375	-0.33	Pass
	14 ms	m/s	-3.20 to -3.70	-3.25	Pass
Maximum Flexion Angle		deg	49.0 to 59.0	51.2	Pass
Time of Maximum Flexion Angle		ms	54.0 to 66.0	58.1	Pass
Head Rotation Decay Time to 0 degree		ms	53.0 to 88.0	58.8	Pass
Overall Test Results					Pass

  
 Laboratory Technician

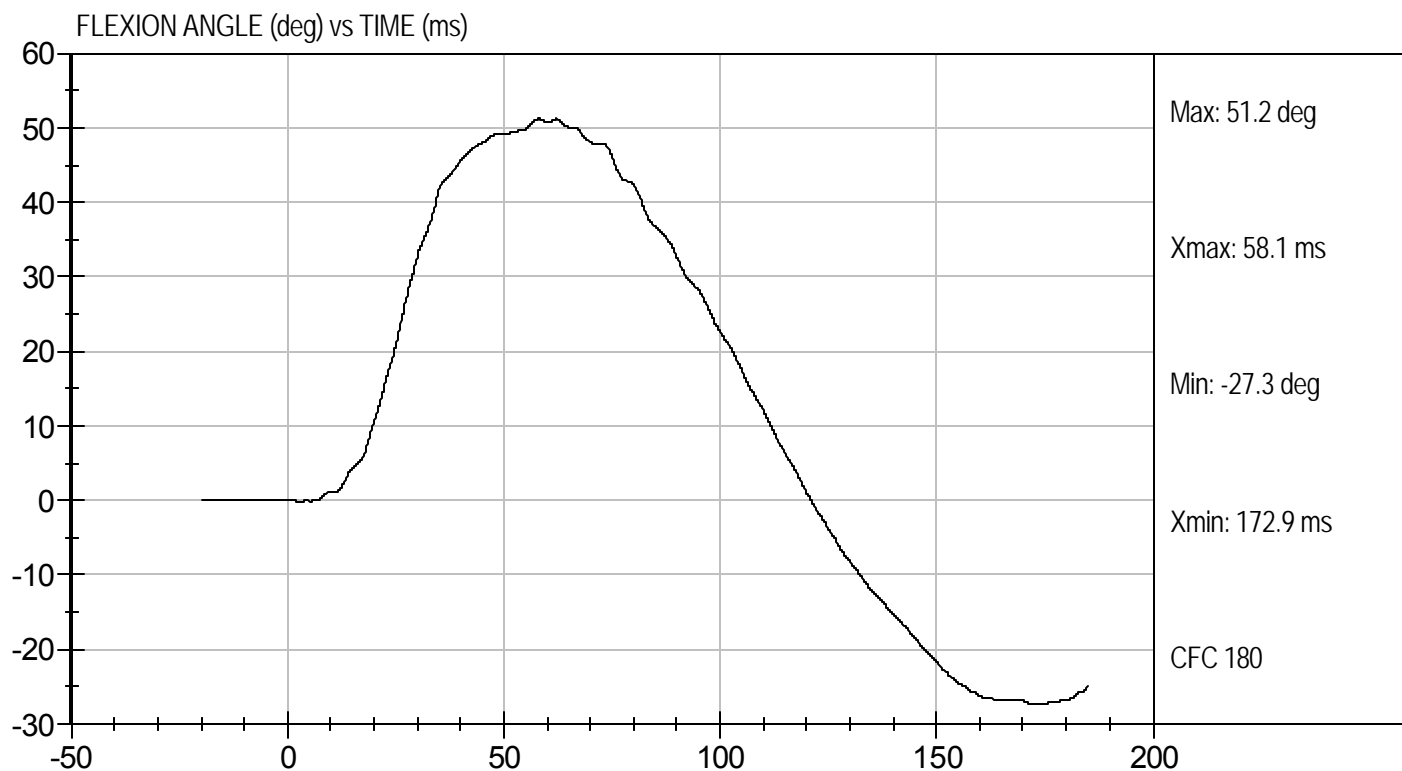
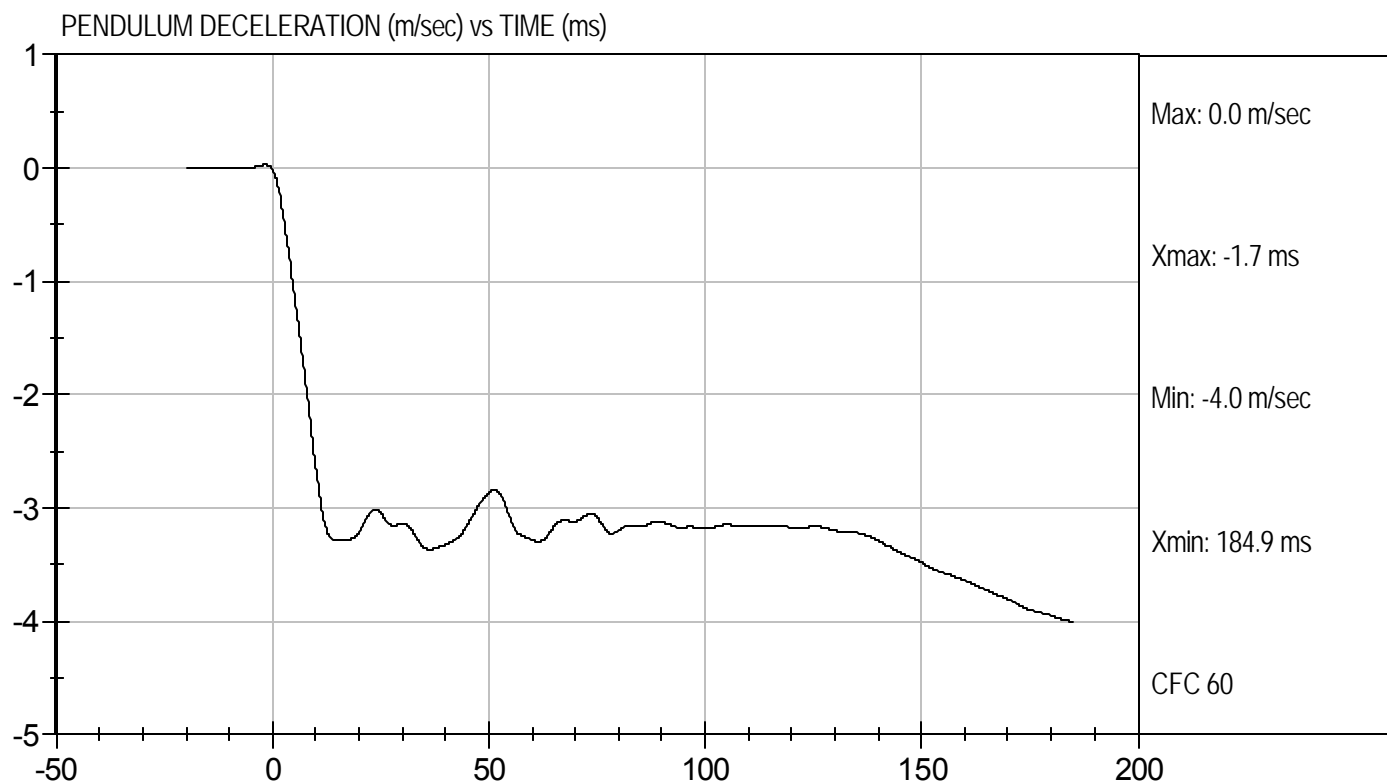
3/17/10  
 Test Date

  
 Approved By



Test Desc: Neck Bending  
Component ID: D10782

Test Date: 3/17/10  
Velocity: 11.26 ft/s, 3.4 m/s

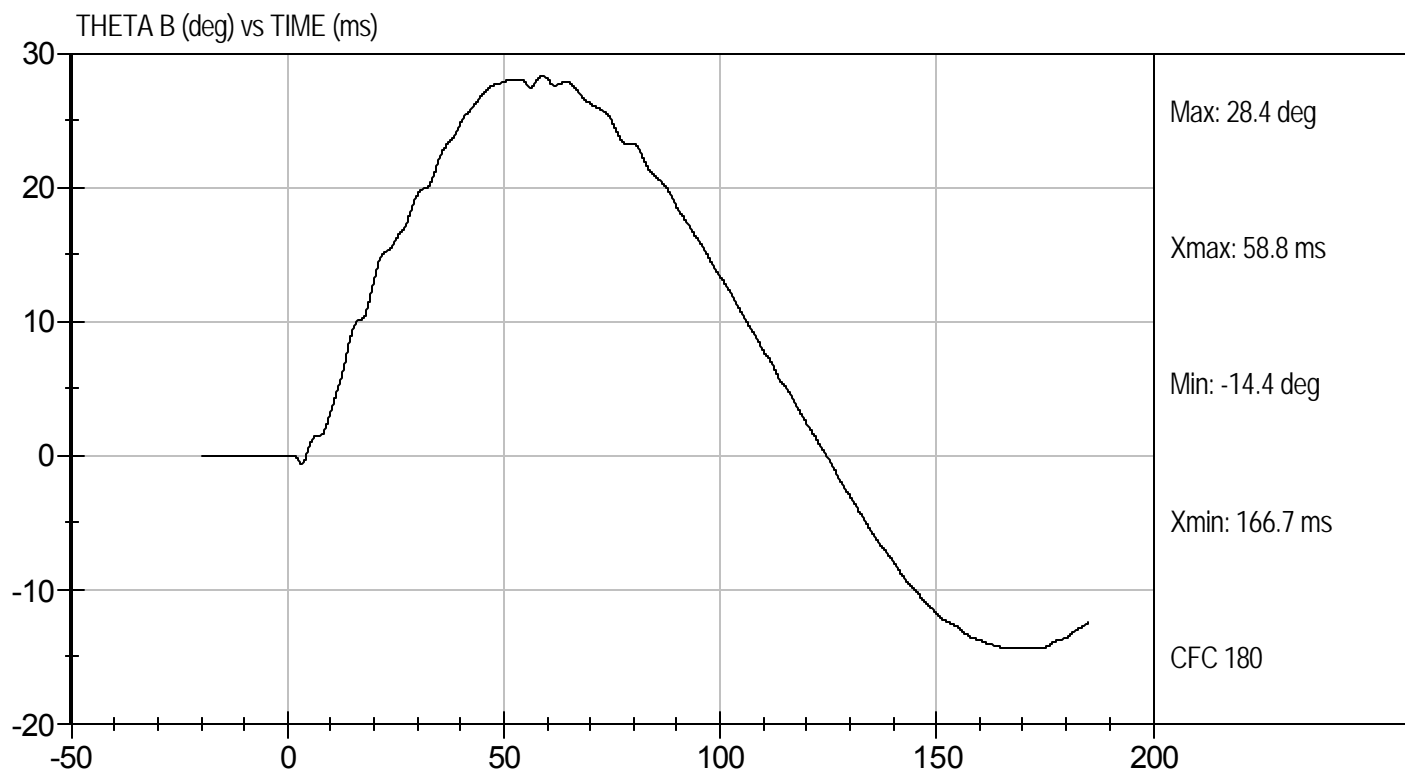
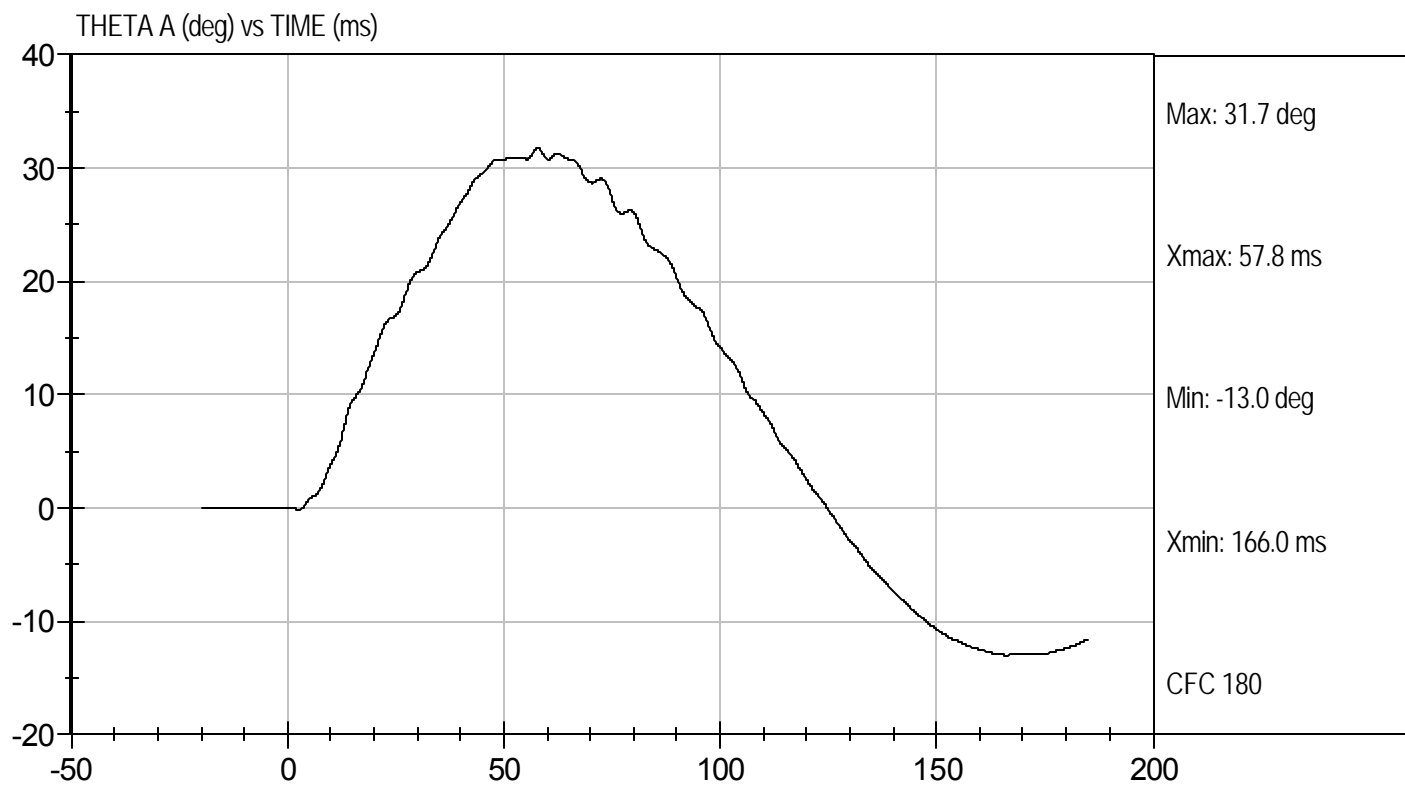






Test Desc: Neck Bending  
Component ID: D10782

Test Date: 3/17/10  
Velocity: 11.26 ft/s, 3.4 m/s



**MGA RESEARCH CORPORATION**  
**SHOULDER IMPACT TEST**  
**ES-2re DUMMY**

**ATD Serial No:** 016

**Test I.D:** D10783

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	22.1	Pass
Laboratory Relative Humidity	%	10 to 70	23	Pass
Pendulum Speed	m/s	4.2 to 4.4	4.3	Pass
Peak Shoulder Acceleration	G's	7.5 to 10.5	9.2	Pass
Time of Peak Shoulder Acceleration	ms	NA	28.7	Pass
			Overall Test Results	Pass

  
Laboratory Technician

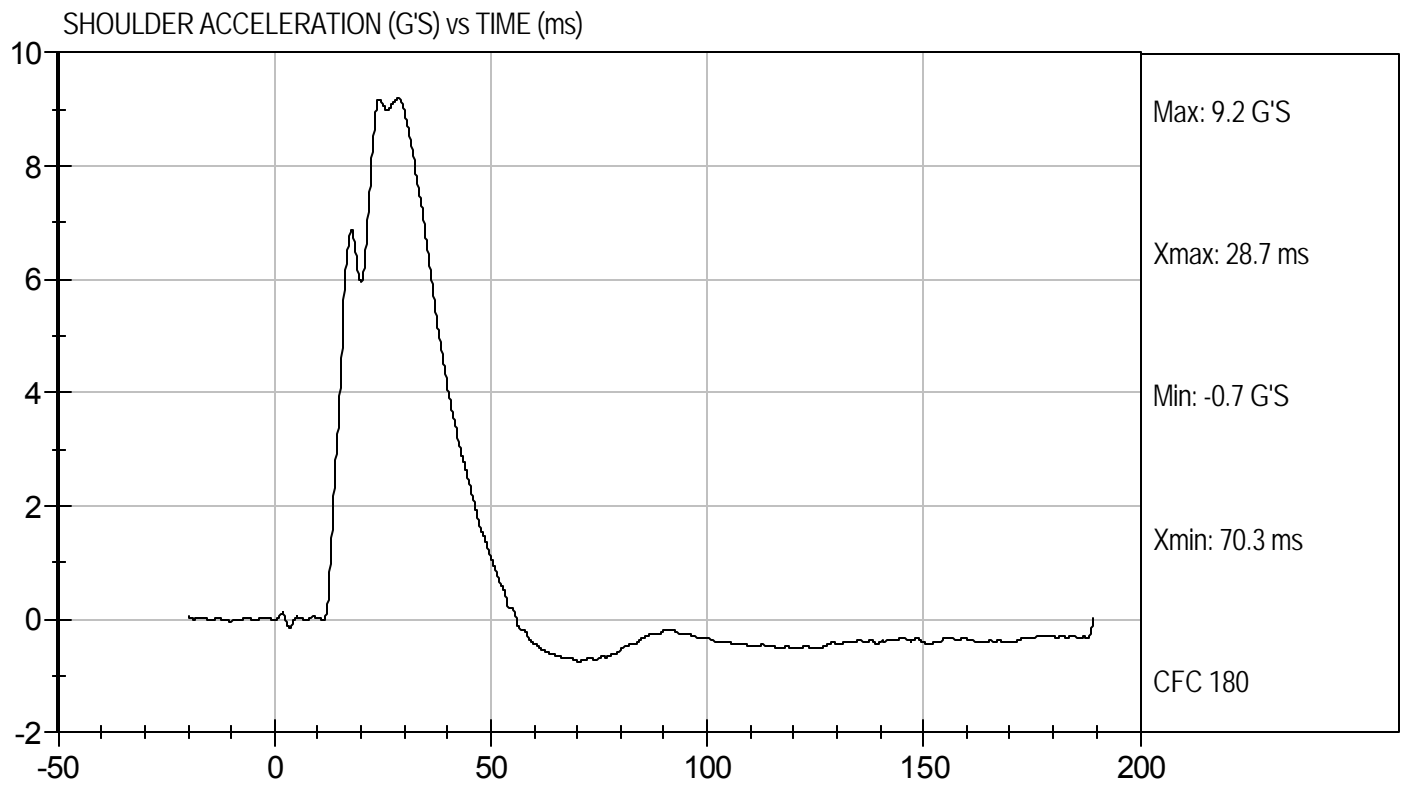
03/17/2010  
Test Date

  
Approved By



Test Desc: Shoulder Impact  
Component ID: D10783

Test Date: 03/17/2010  
Velocity: 14.25 ft/s, 4.3 m/s



**MGA RESEARCH CORPORATION**

**UPPER RIB TEST**

**ES-2re DUMMY**


**ATD Serial No:** 016

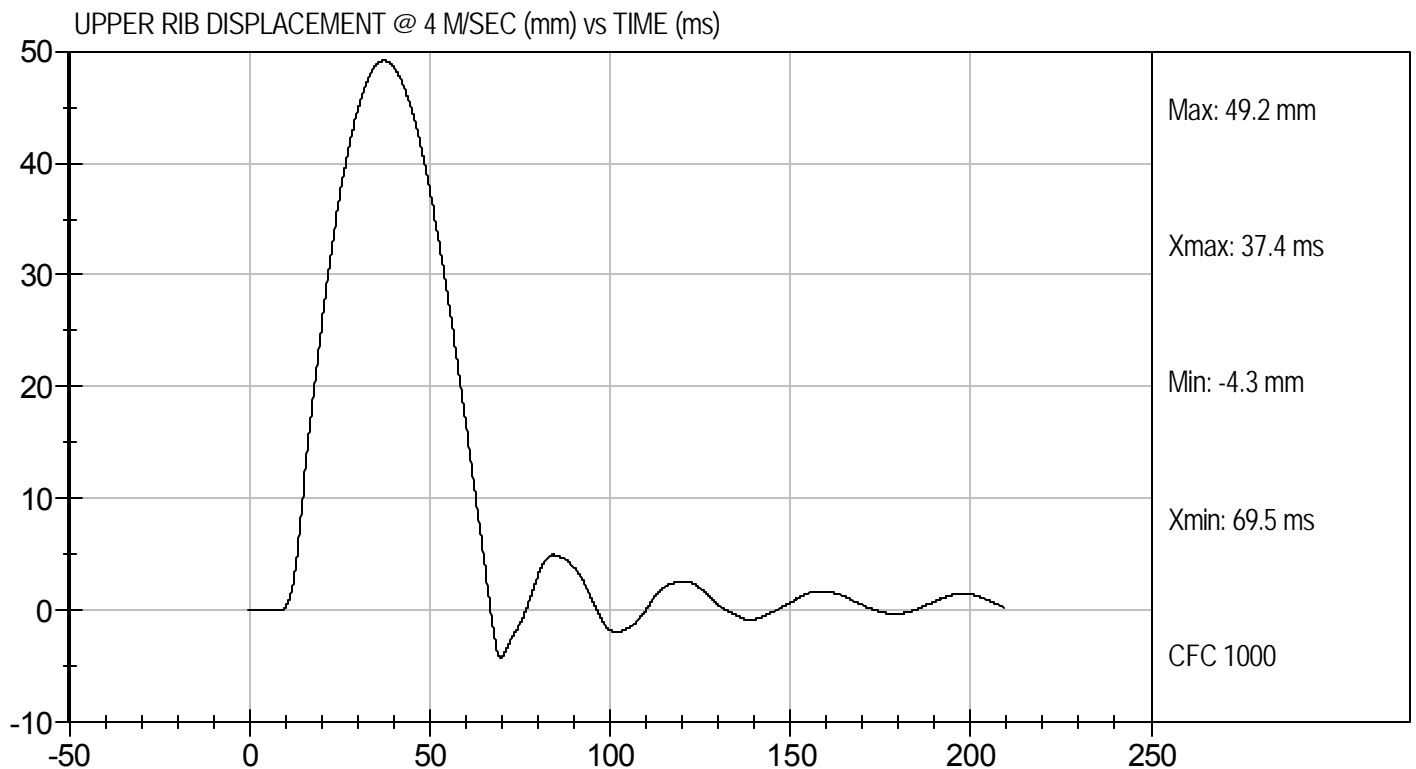
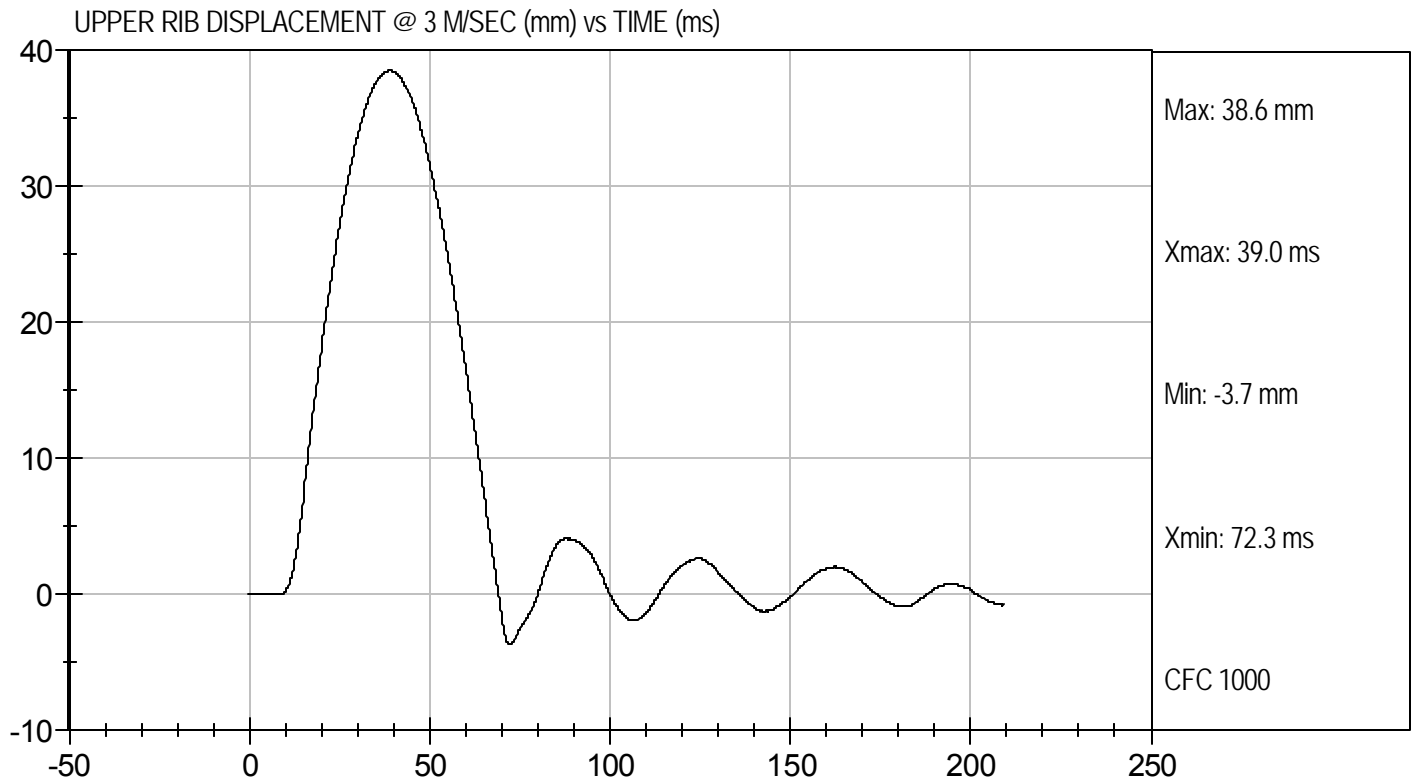
**Test I.D:** D10784

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	24	Pass
Displacement at 3 m/s	mm	36.0 to 40.0	38.6	Pass
Displacement at 4 m/s	mm	46.0 to 51.0	49.2	Pass
Overall Test Results				Pass

  
Laboratory Technician

03/17/2010  
Test Date

  
Approved By





**MGA RESEARCH CORPORATION**

**MID RIB TEST**

**ES-2re DUMMY**


**ATD Serial No:** 016

**Test I.D:** D10785

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Displacement at 3 m/s	mm	36.0 to 40.0	38.9	Pass
Displacement at 4 m/s	mm	46.0 to 51.0	49.9	Pass
Overall Test Results				Pass

  
Laboratory Technician

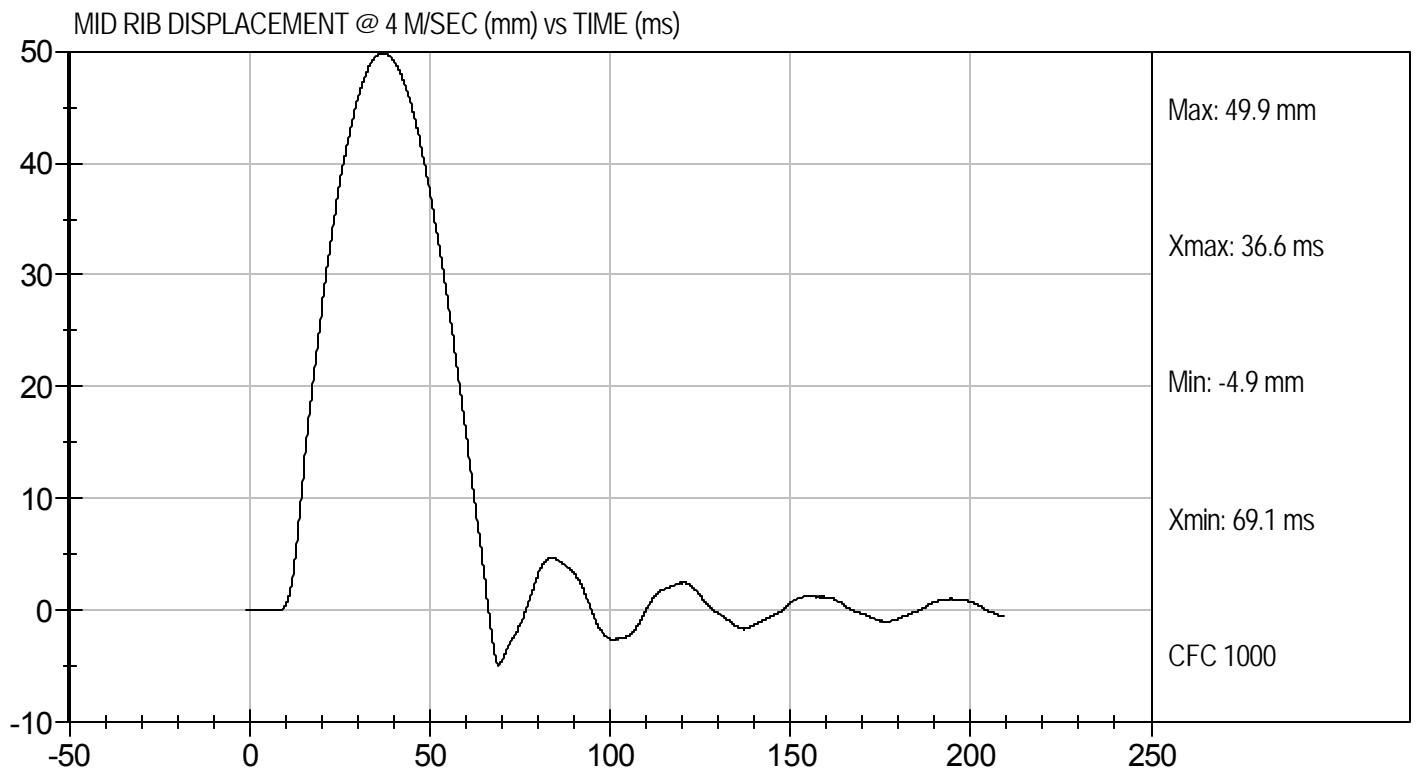
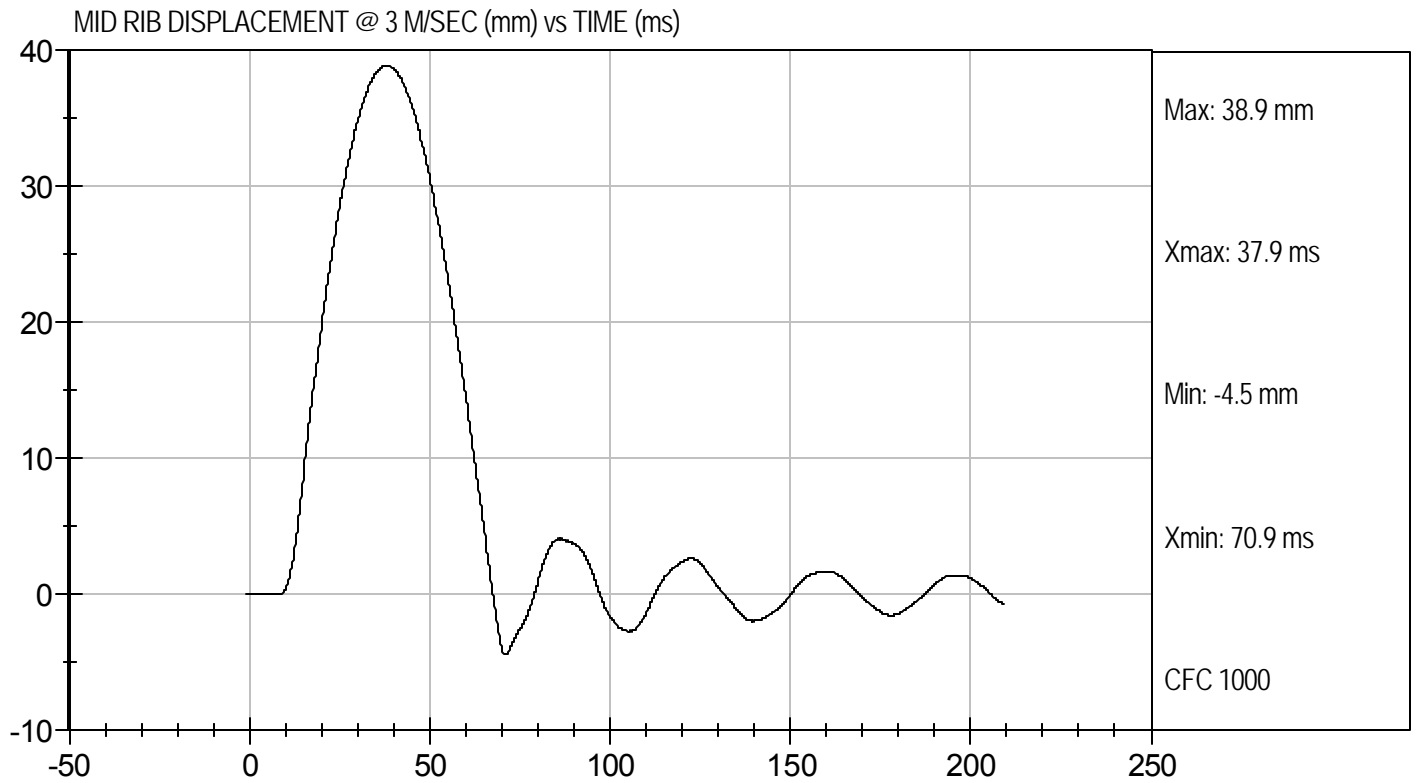
03/17/2010  
Test Date

  
Approved By



Test Desc: Rib Impact - Mid  
Component ID: D10785

Test Date: 03/17/2010



**MGA RESEARCH CORPORATION**

**LOWER RIB TEST**

**ES-2re DUMMY**


**ATD Serial No:** 016

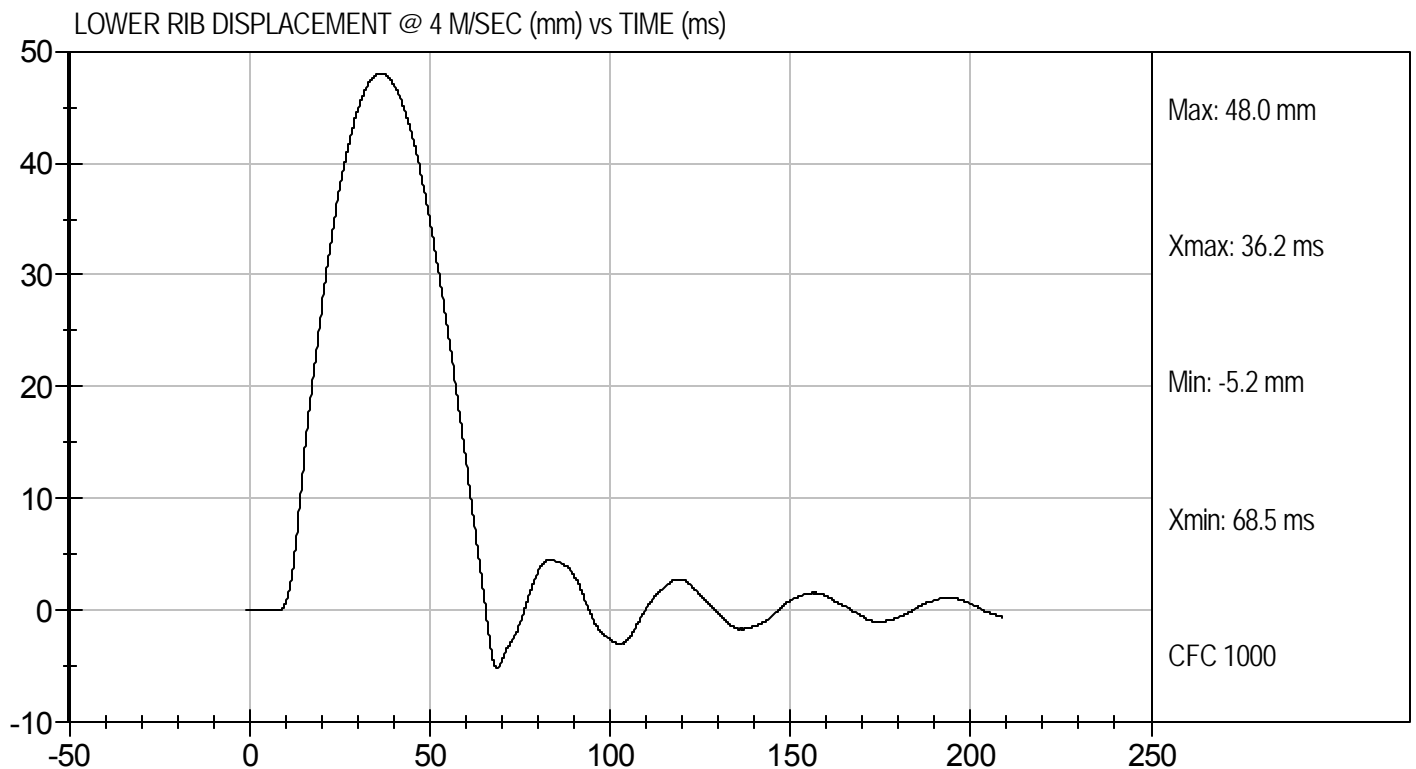
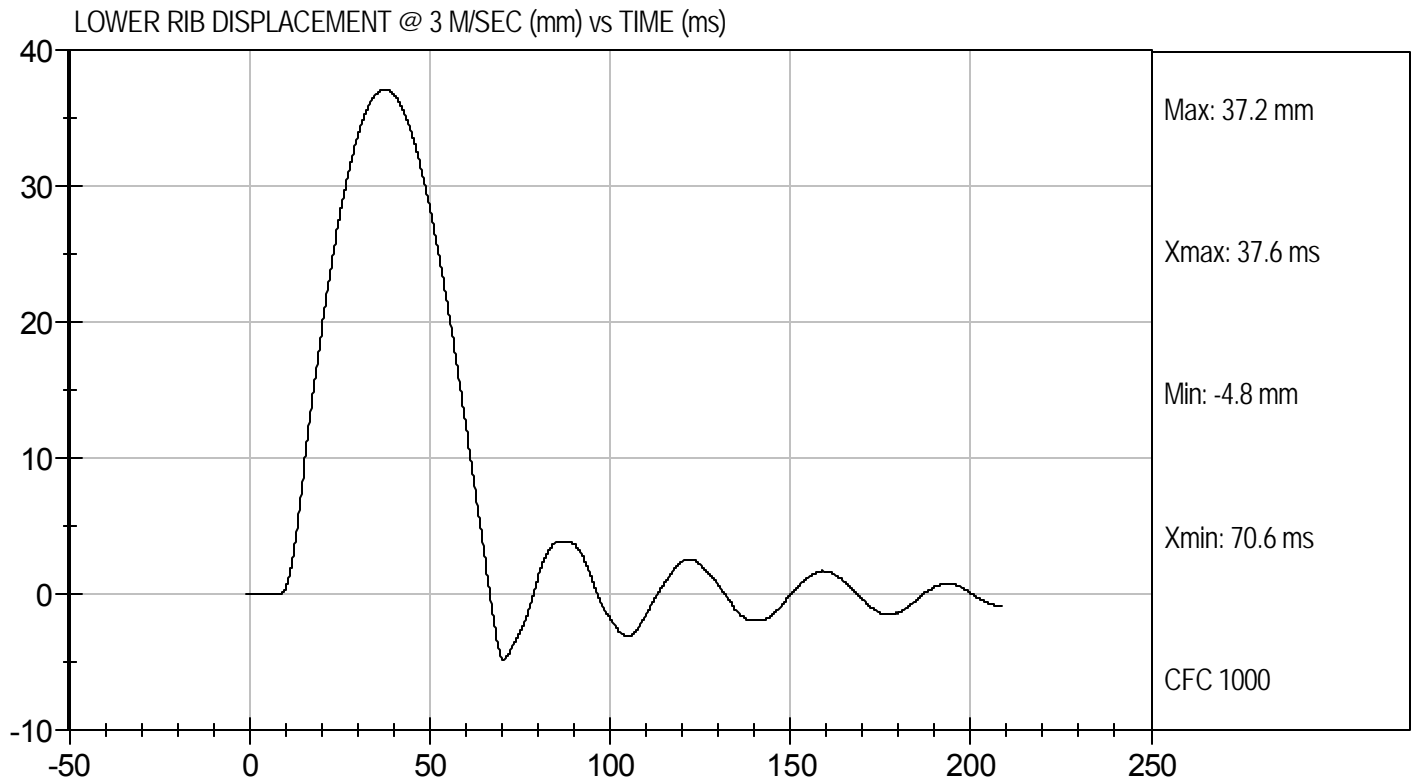
**Test I.D:** D10786

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.0	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Displacement at 3 m/s	mm	36.0 to 40.0	37.2	Pass
Displacement at 4 m/s	mm	46.0 to 51.0	48.0	Pass
Overall Test Results				Pass

  
Laboratory Technician

03/17/2010  
Test Date

  
Approved By



**MGA RESEARCH CORPORATION**

**ABDOMEN TEST**

**ES-2re DUMMY**


**ATD Serial No:** 016

**Test I.D:** D10787

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	22.2	Pass
Laboratory Relative Humidity	%	10 to 70	24	Pass
Probe Speed	m/s	3.90 to 4.10	4.0	Pass
Maximum Impact Force	kN	4.00 to 4.80	4.20	Pass
Time of Maximum Impactor Force	ms	10.60 to 13.00	11.10	Pass
Maximum Total Abdomen Force	kN	2.20 to 2.70	2.62	Pass
Time of Maximum Abdomen Force	ms	10.00 to 12.30	11.60	Pass
Overall Test Results				Pass

  
Laboratory Technician

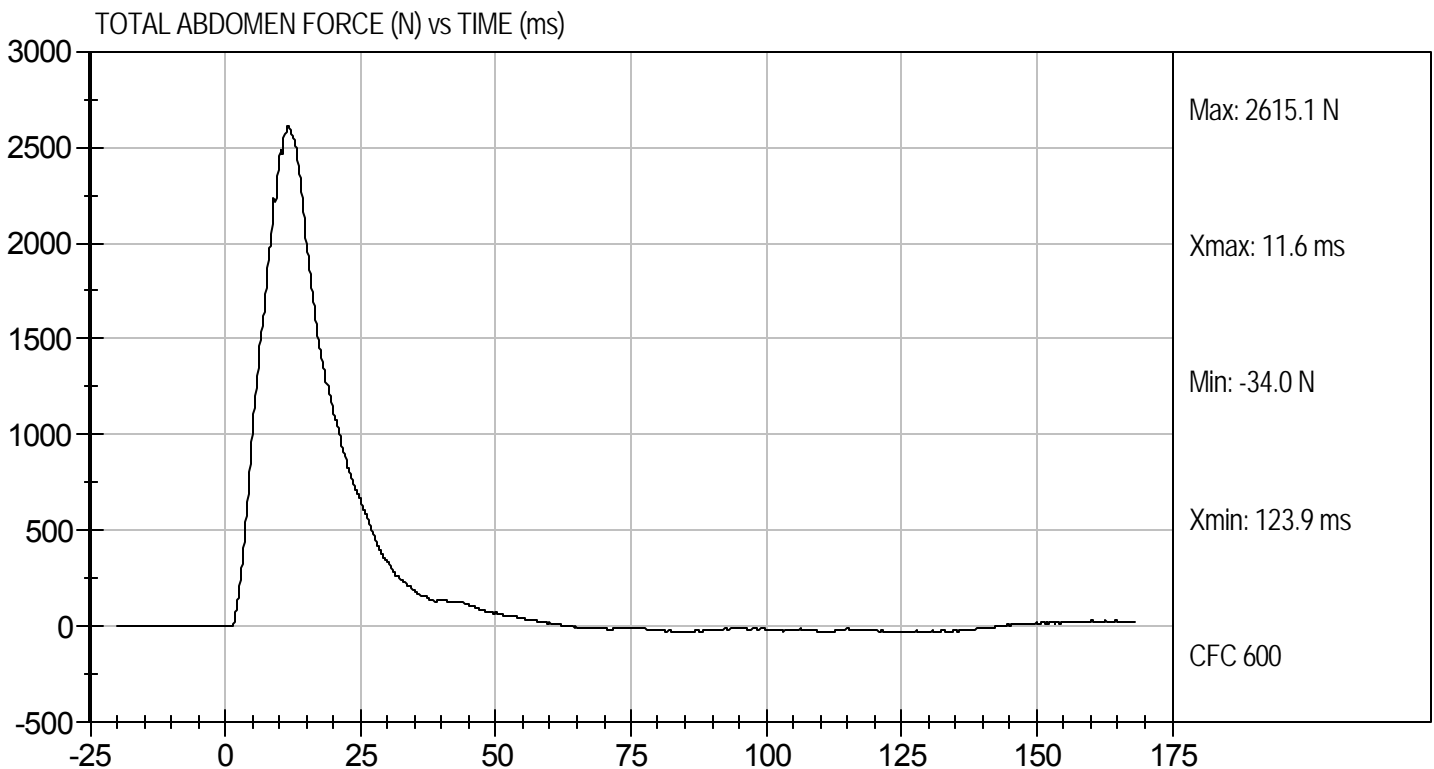
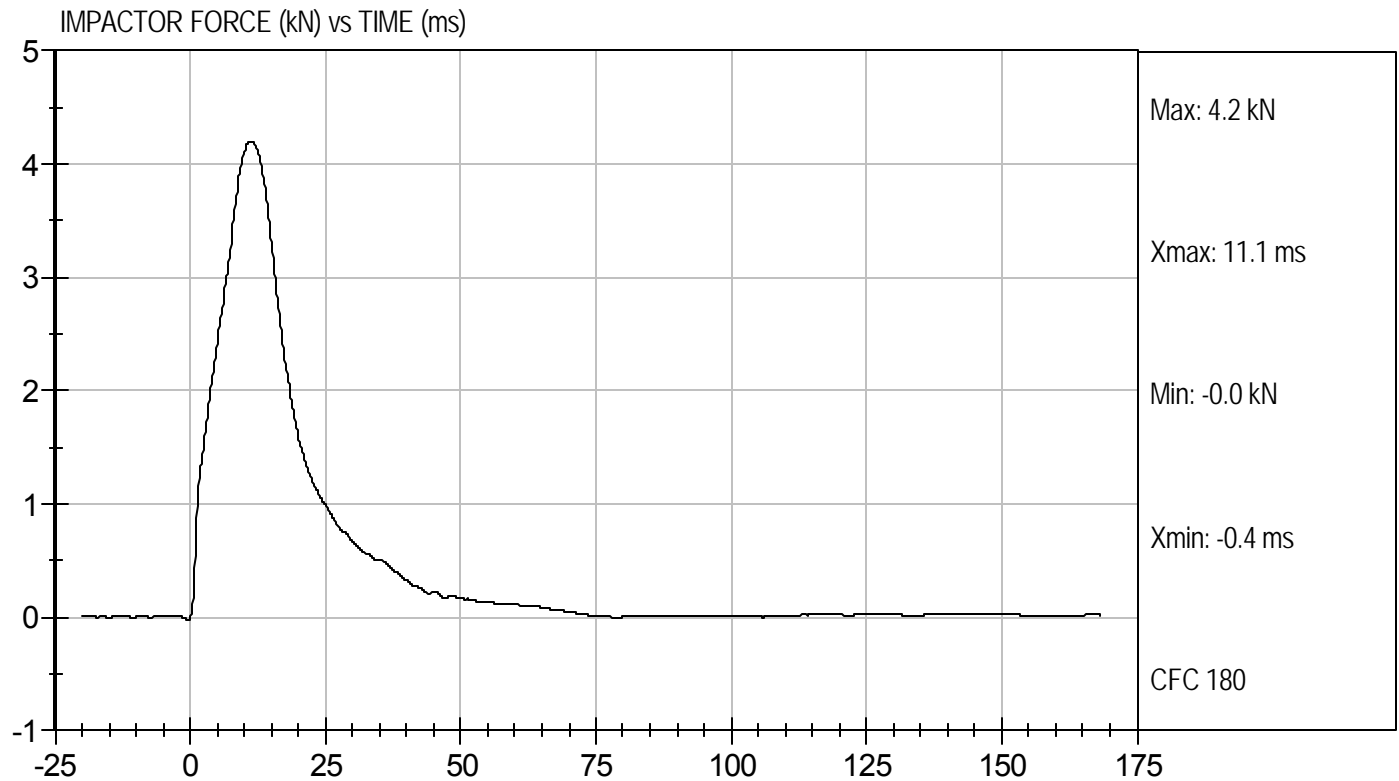
03/17/2010  
Test Date

  
Approved By



Test Desc: Abdomen Impact  
Component ID: D10787

Test Date: 03/17/2010  
Velocity: 13.12 ft/s, 4.0 m/s





**MGA RESEARCH CORPORATION**  
**LUMBAR SPINE TEST**  
**ES-2re DUMMY**


**ATD Serial No:** 016

**Test I.D:** D10788

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity		%	10 to 70	23	Pass
Pendulum Speed		m/s	5.95 to 6.15	6.12	Pass
Pendulum Deceleration	1 ms	m/s	-0.05 to 0.00	-0.01	Pass
	3.7 ms	m/s	-0.425 to -0.24	-0.41	Pass
	27 ms	m/s	-6.50 to -5.80	-5.78	Pass
	30 ms	m/s	>= -6.5	-5.96	Pass
Maximum Flexion Angle		deg	45.0 to 55.0	45.4	Pass
Time of Maximum Flexion Angle		ms	39.0 to 53.0	46.0	Pass
Headform Rotation Decay to Initial Position		ms	37 to 57	45	Pass
Overall Results				Pass	

  
 Laboratory Technician

3/17/10  
 Test Date

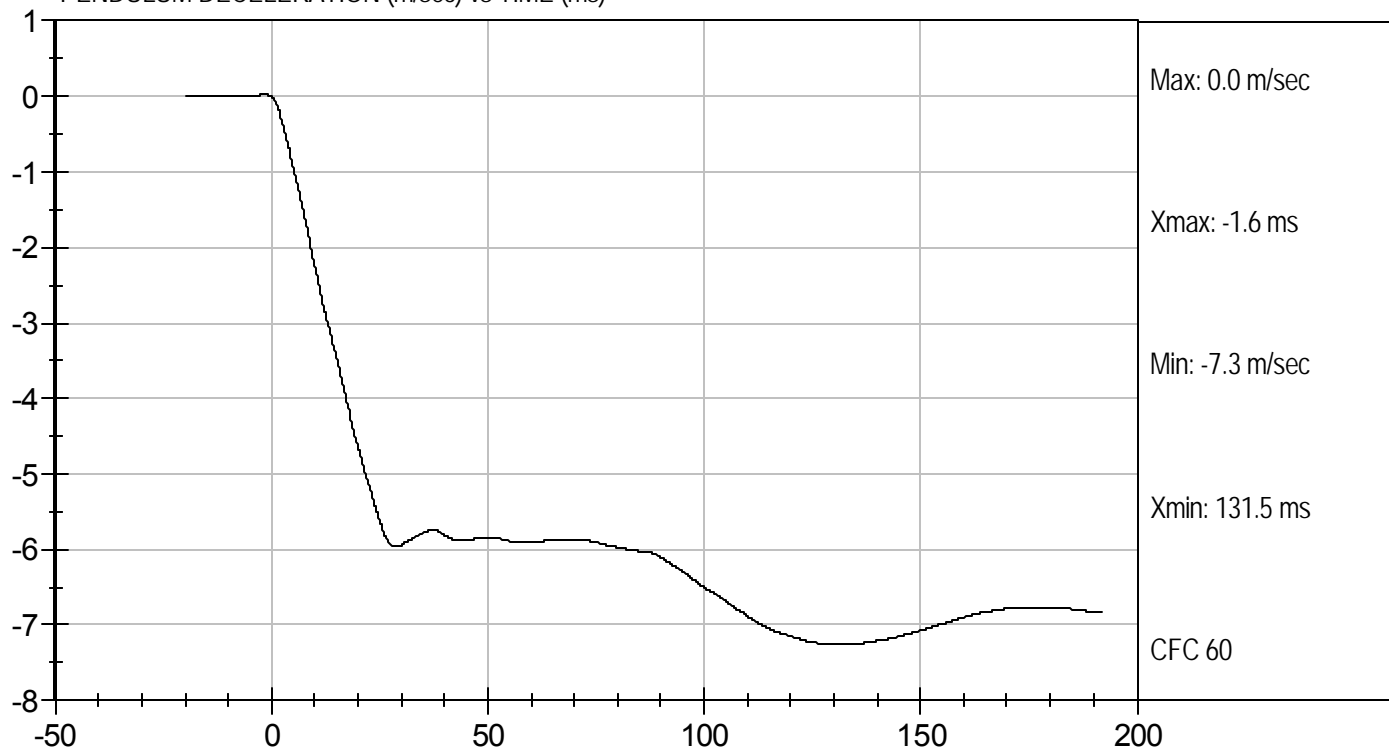
  
 Approved By



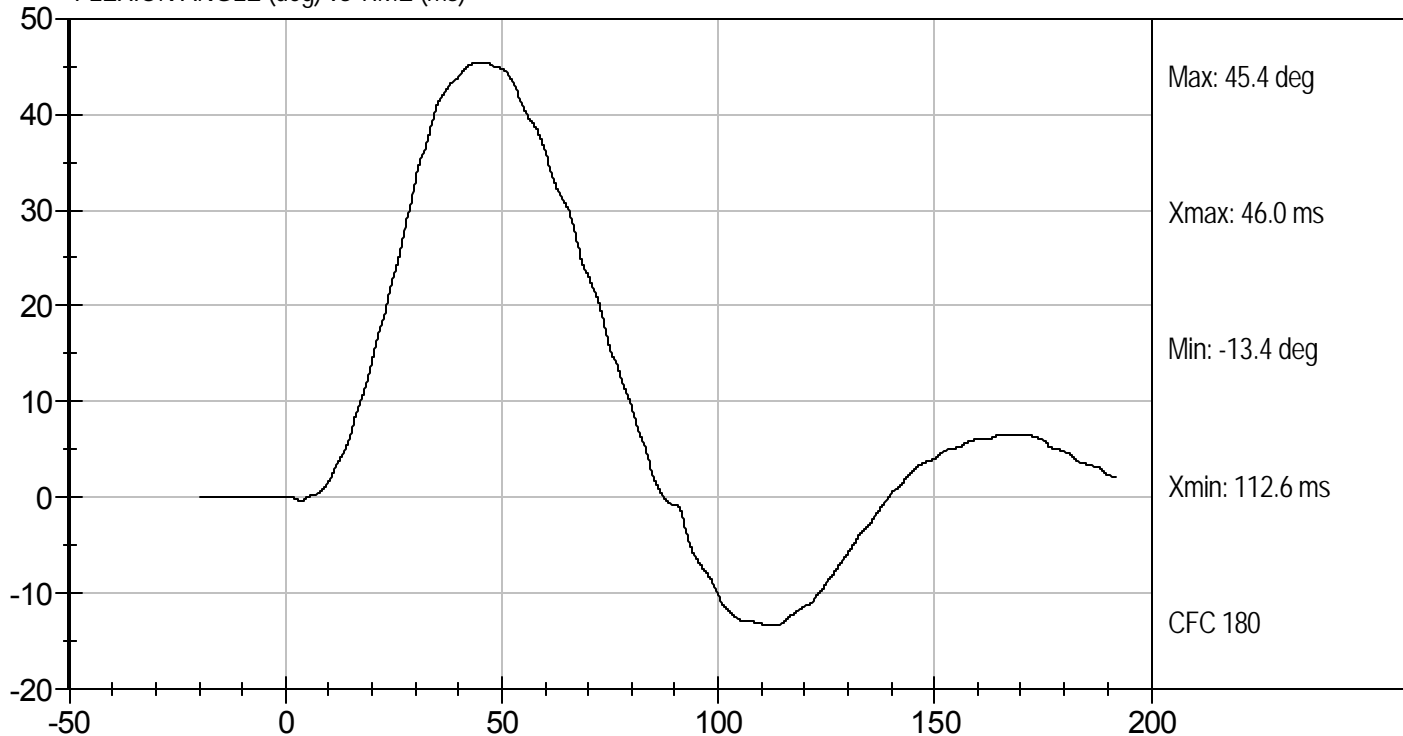
Test Desc: Lumbar Bending  
Component ID: D10788

Test Date: 3/17/10  
Velocity: 20.08 ft/s, 6.12 m/s

PENDULUM DECELERATION (m/sec) vs TIME (ms)



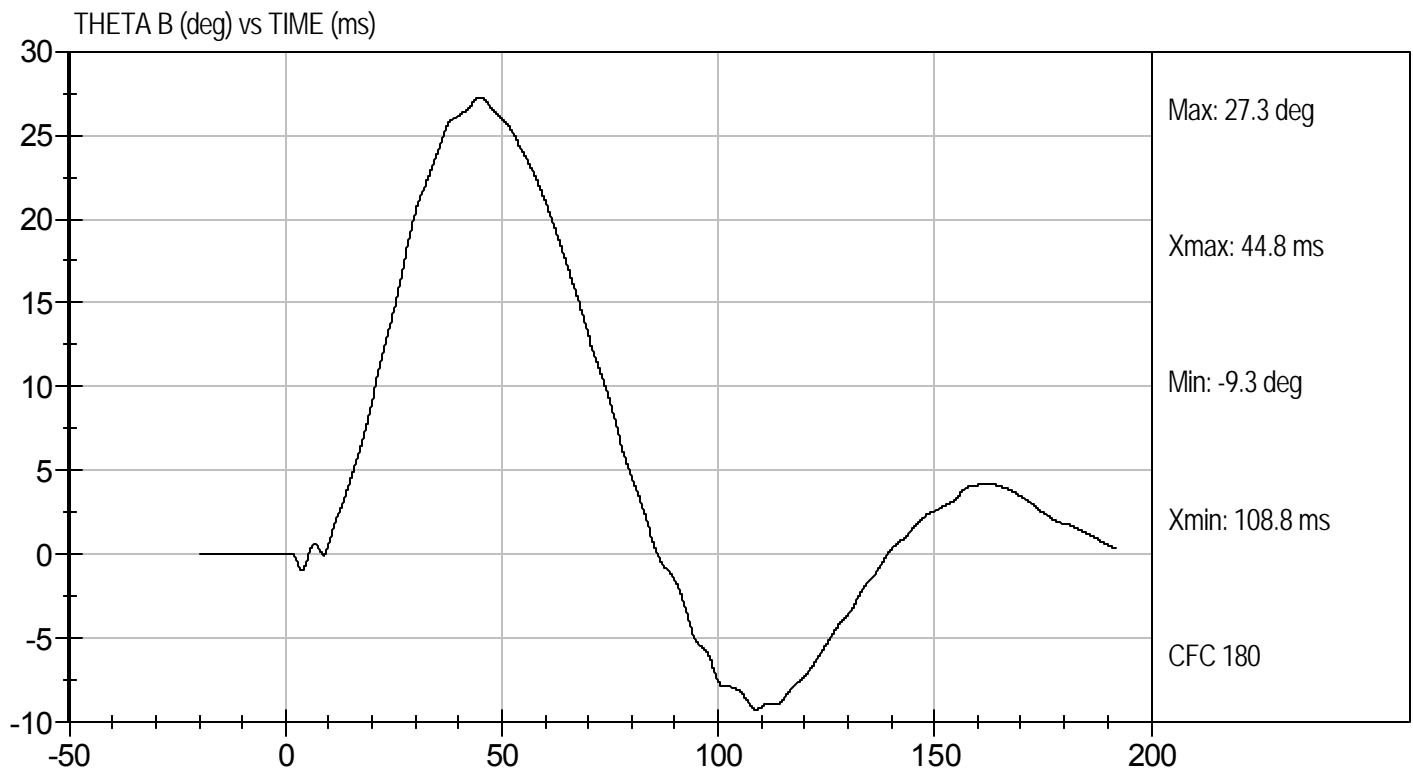
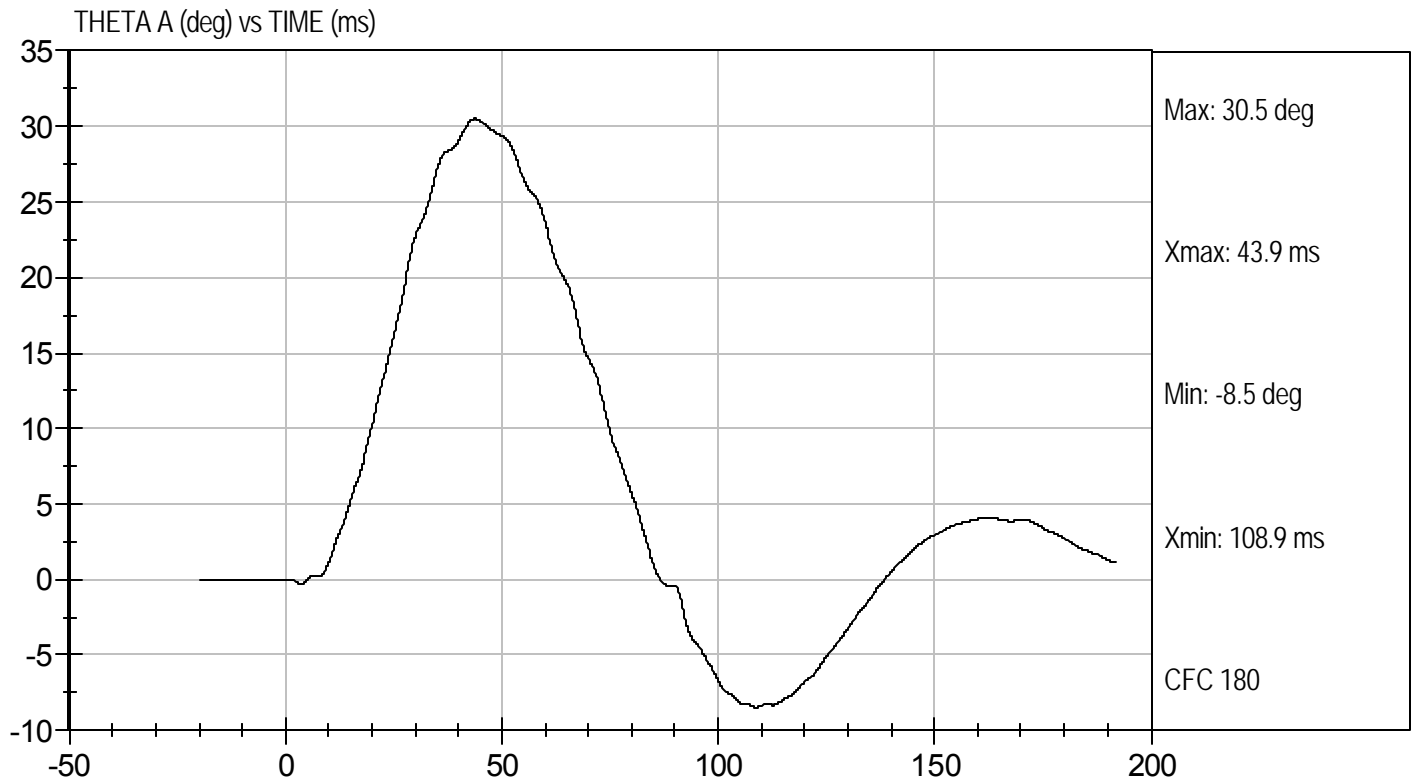
FLEXION ANGLE (deg) vs TIME (ms)





Test Desc: Lumbar Bending  
Component ID: D10788

Test Date: 3/17/10  
Velocity: 20.08 ft/s, 6.12 m/s



**MGA RESEARCH CORPORATION**

**PELVIS TEST  
ES-2re DUMMY**


**ATD Serial No:** 016

**Test I.D:** D10789

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	22.2	Pass
Laboratory Relative Humidity	%	10 to 70	23	Pass
Probe Speed	m/s	4.20 to 4.40	4.30	Pass
Maximum Impactor Force	kN	4.70 to 5.40	4.90	Pass
Time of Maximum Impactor Force	ms	11.80 to 16.10	12.40	Pass
Maximum Pubic Force	kN	1.23 to 1.59	1.46	Pass
Time of Maximum Pubic Force	ms	12.20 to 17.00	13.00	Pass
Overall Test Results				Pass

  
Laboratory Technician

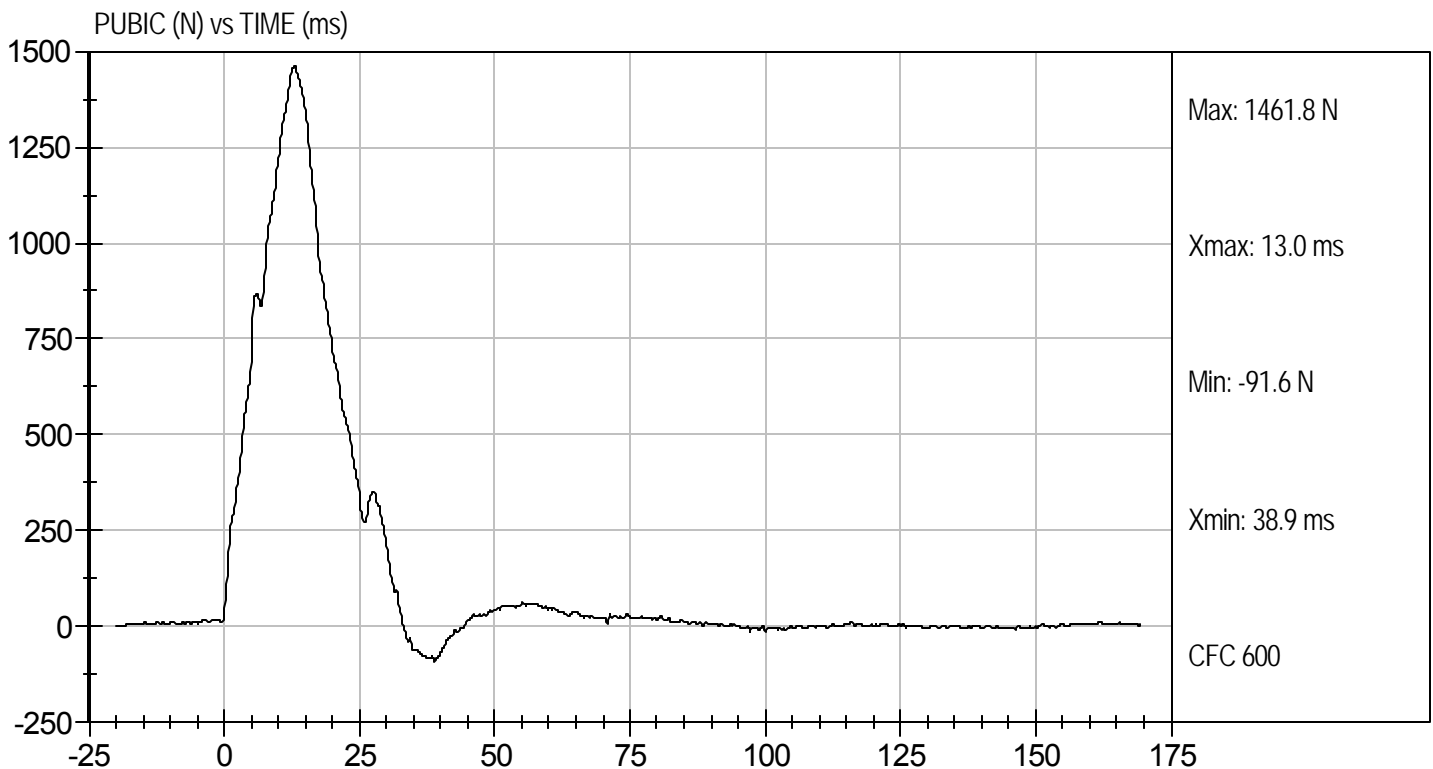
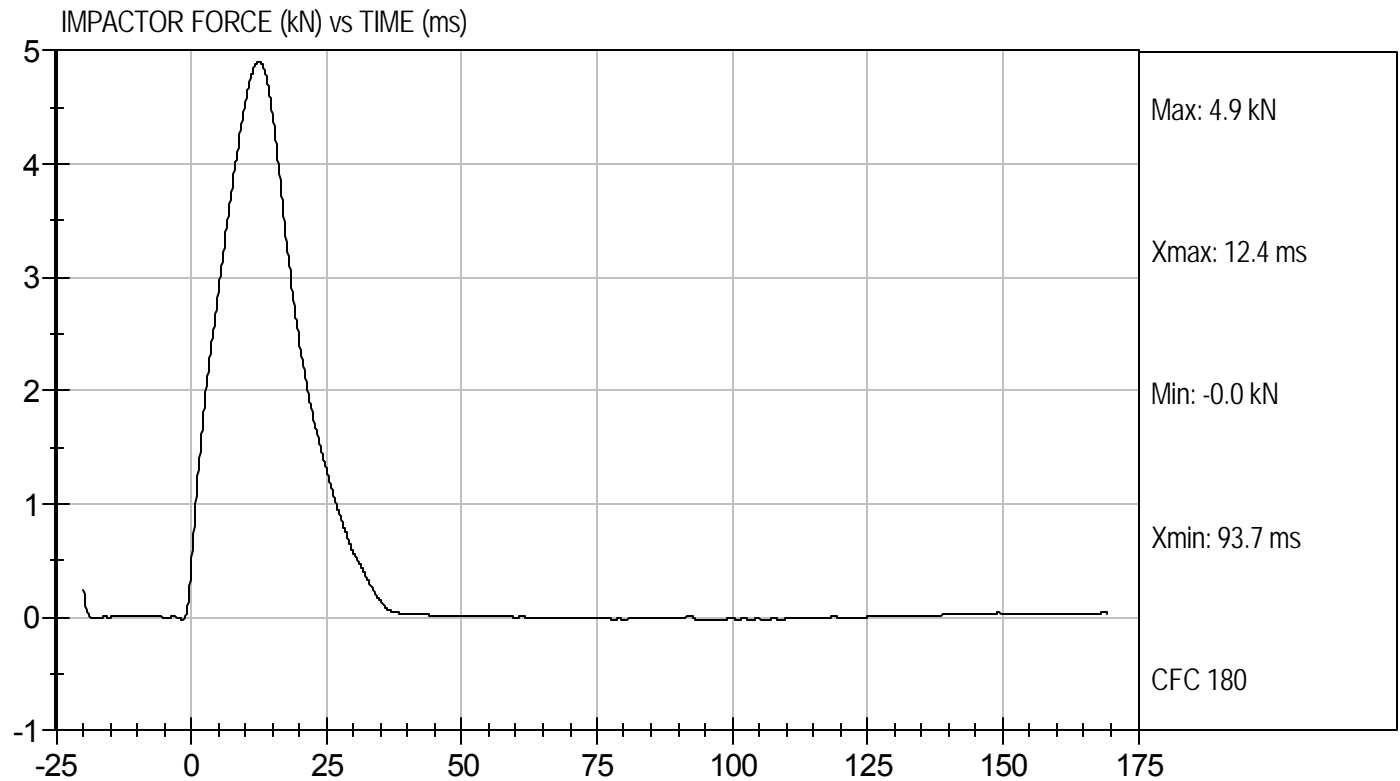
03/17/2010  
Test Date

  
Approved By



Test Desc: Pelvis Impact  
Component ID: D10789

Test Date: 03/17/2010  
Velocity: 14.12 ft/s, 4.30 m/s



**MGA RESEARCH CORPORATION**  
**FULL BODY THORAX IMPACT TEST**  
**ES-2re DUMMY**


**ATD Serial No:** 016

**Test I.D:** D10780

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.7	Pass
Humidity	%	10 to 70	24	Pass
Probe Speed	m/s	5.40 to 5.60	5.58	Pass
Maximum Impactor Force (after 6 ms)	kN	5.10 to 6.20	5.24	Pass
Upper Rib Displacement	mm	34.0 to 41.0	37.9	Pass
Middle Rib Displacement	mm	37.0 to 45.0	40.7	Pass
Lower Rib Displacement	mm	37.0 to 44.0	40.5	Pass
			Overall Test Results	Pass

  
Laboratory Technician

03/17/2010  
Test Date

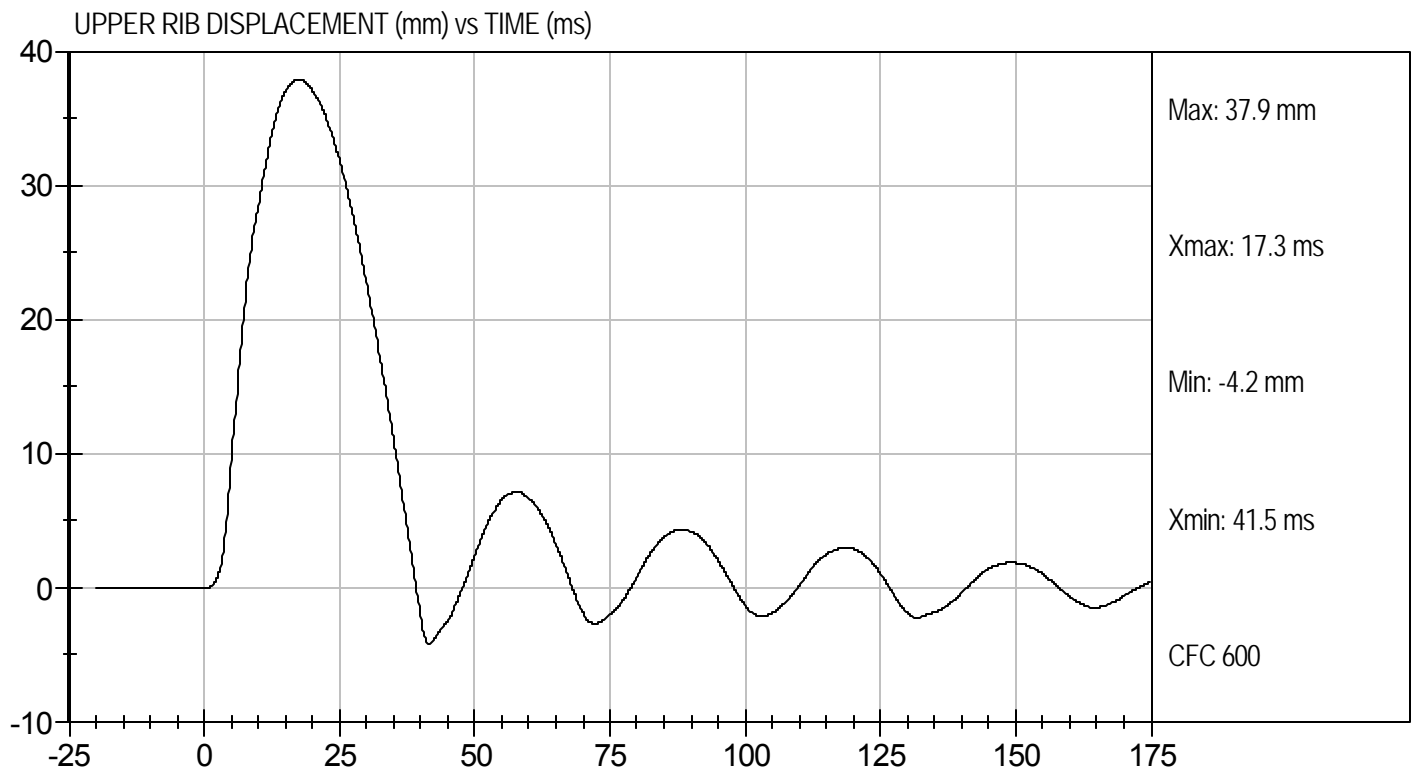
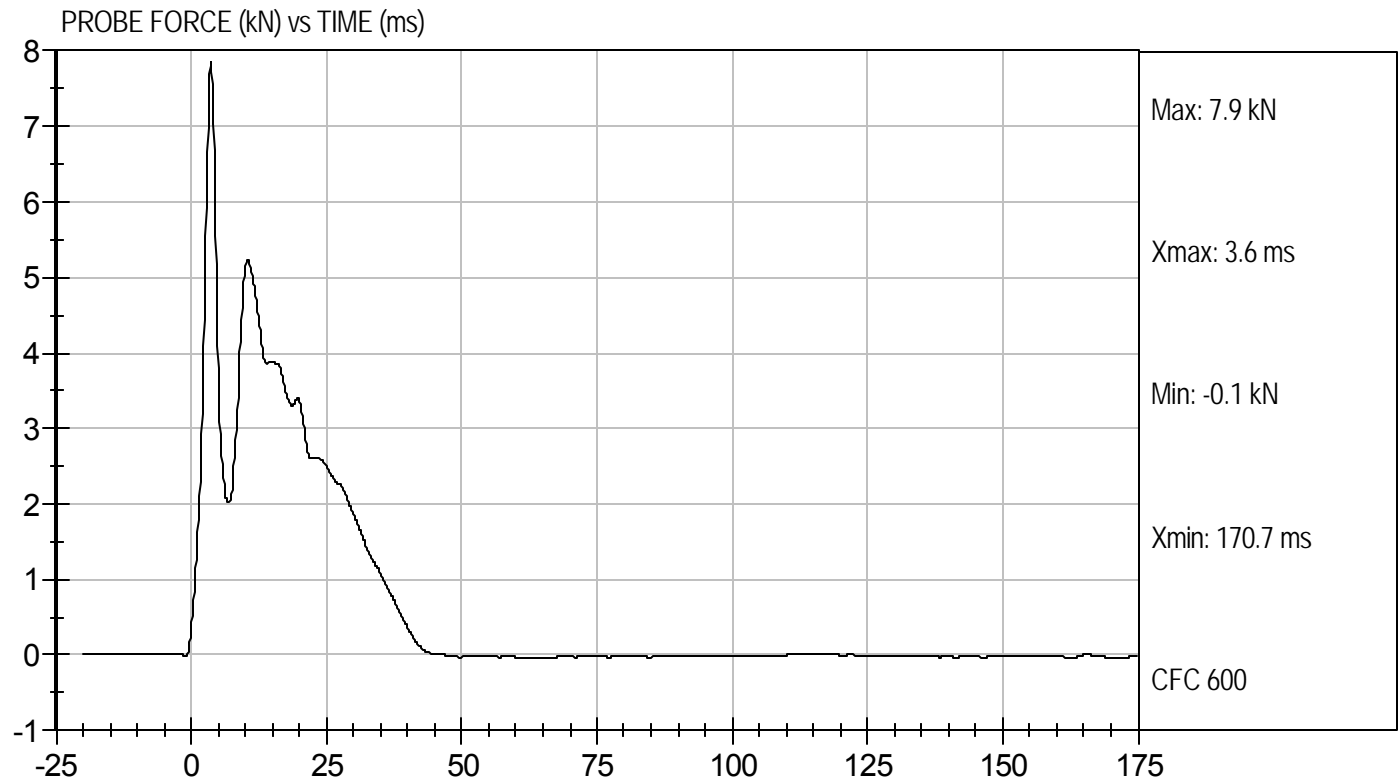
  
Approved By





Test Desc: Thorax Impact  
Component ID: D10780

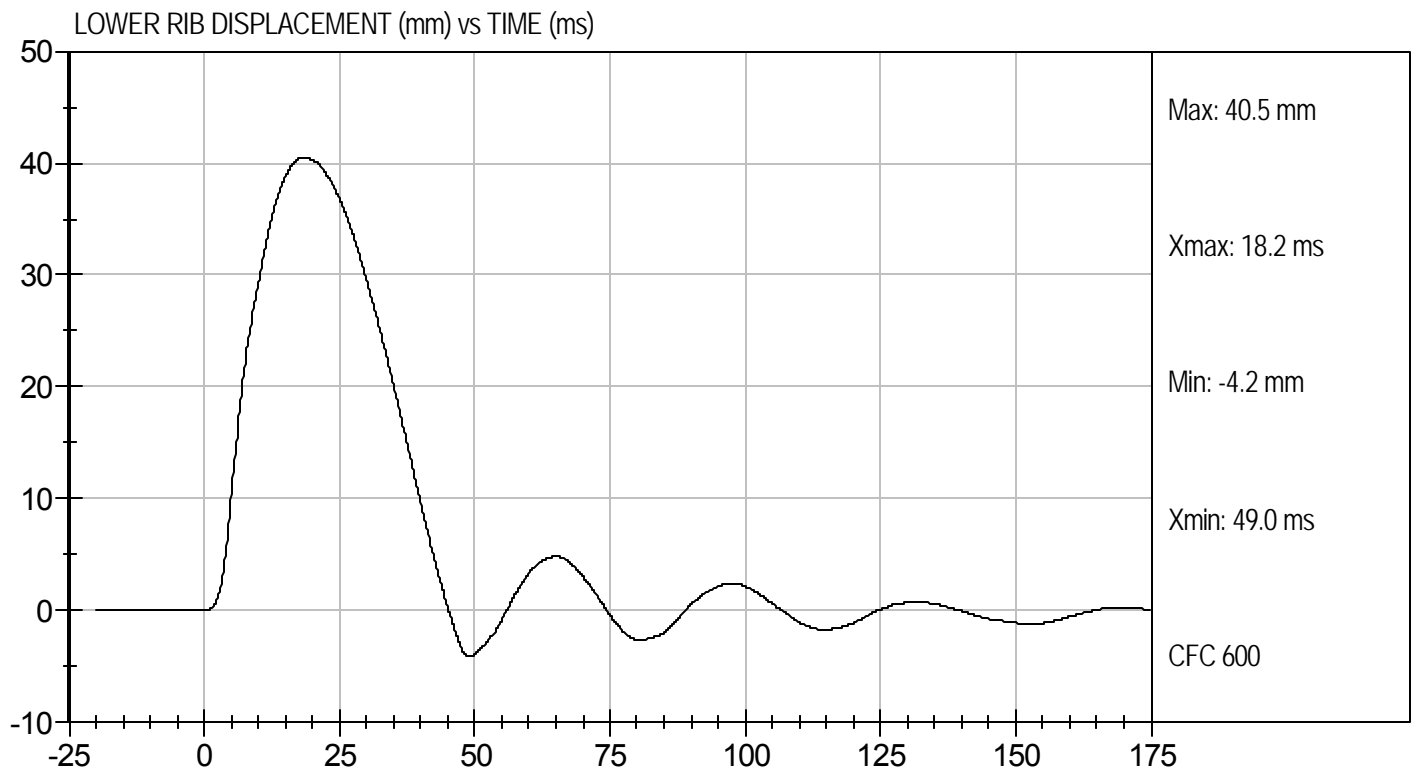
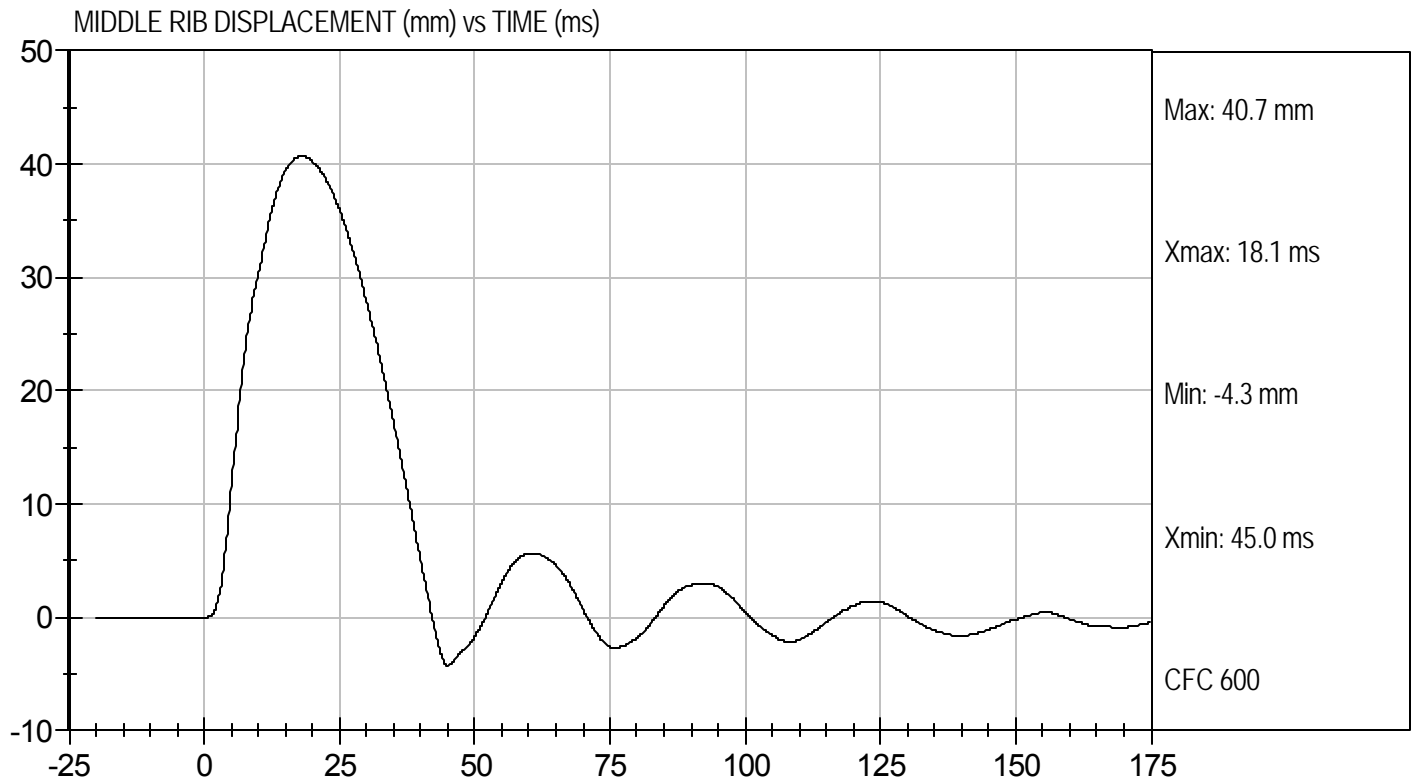
Test Date: 03/17/2010  
Velocity: 18.32 ft/s, 5.58 m/s





Test Desc: Thorax Impact  
Component ID: D10780

Test Date: 03/17/2010  
Velocity: 18.32 ft/s, 5.58 m/s



## **APPENDIX F**

### **SID-IIs PERFORMANCE CALIBRATION TEST DATA**

**MGA RESEARCH CORPORATION**  
**HEAD DROP TEST**  
**SID-Its BUILD LEVEL D DUMMY**


**ATD Serial No:** 262

**Test ID:** D10101

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	22.1	Pass
Laboratory Relative Humidity	%	10 to 70	21	Pass
Peak Resultant Acceleration	G's	115 to 137	129	Pass
Peak Lateral Acceleration	G's	+/- 15	3.8	Pass
Unimodal	N/A	<15%	Yes	Pass
Overall Test Results				Pass

  
Laboratory Technician

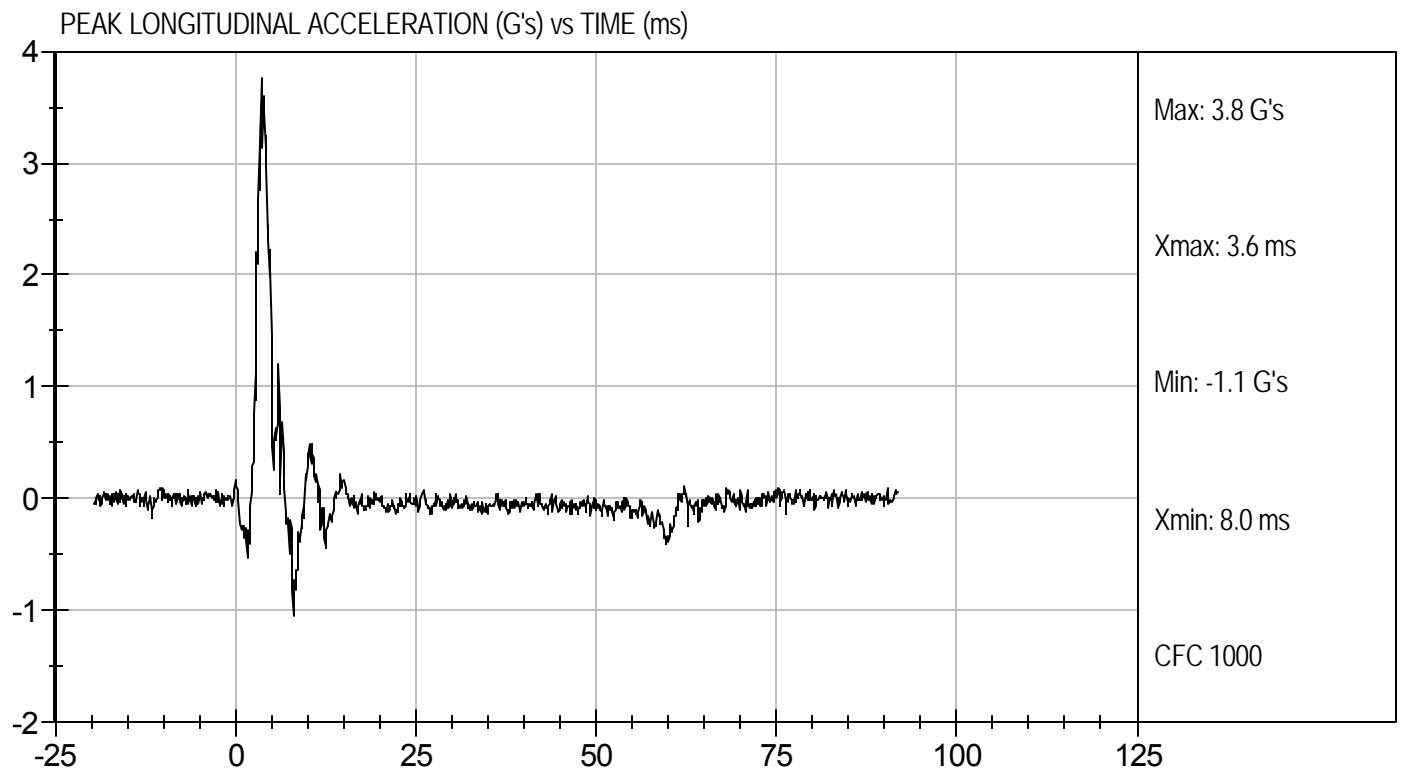
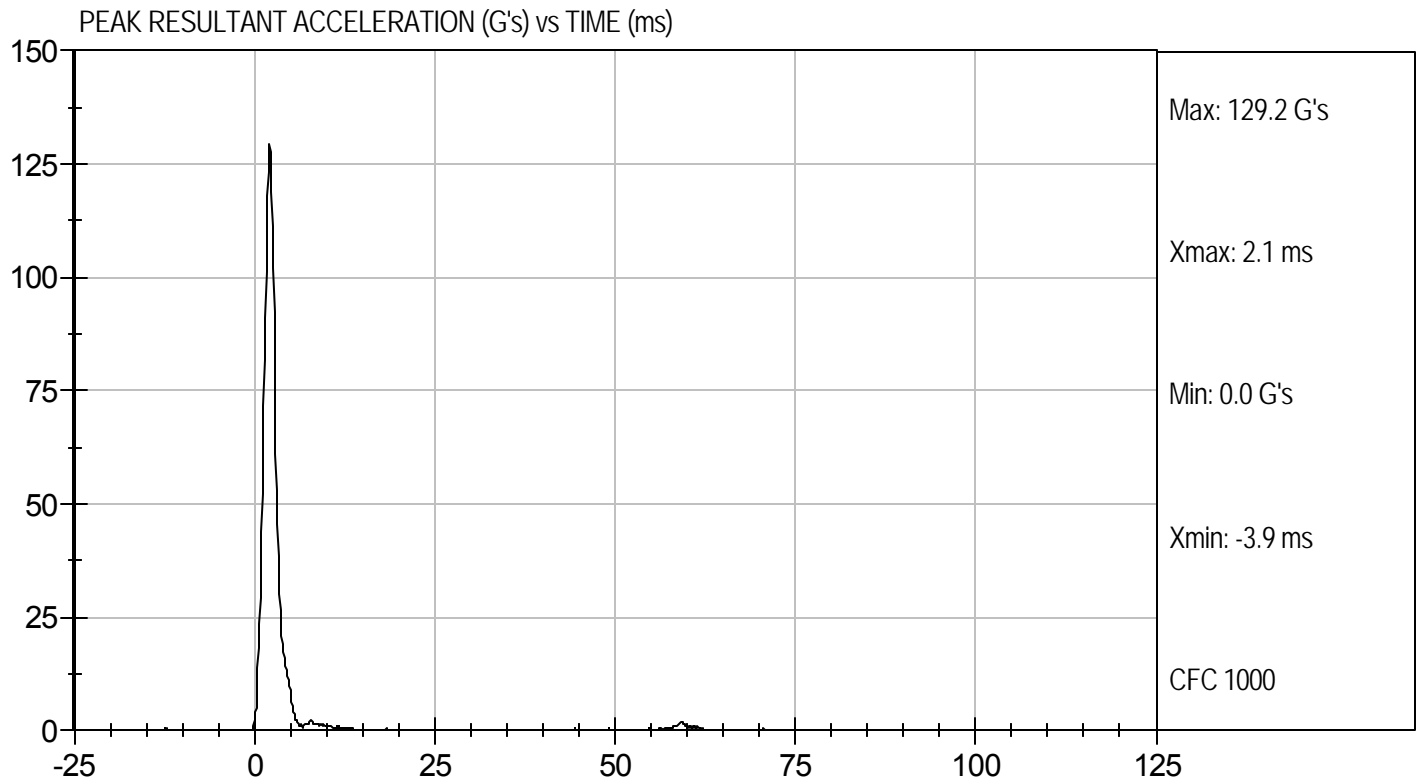
1/19/10  
Test Date

  
Approved By



Test Desc: Head Drop  
Component ID: D10101

Test Date: 1/19/10  
Velocity: 0 ft/s, 0 m/s



**MGA RESEARCH CORPORATION**  
**LATERAL NECK PENDULUM TEST**  
**SID-IIs BUILD LEVEL D DUMMY**


**ATD Serial No:** 262

**Test I.D:** D10102

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.9	Pass
Humidity		%	10 to 70	21	Pass
Impact Velocity		m/s	5.51 to 5.63	5.61	Pass
Delta Velocity	10 ms	m/s	2.20 to 2.80	2.59	Pass
	15 ms	m/s	3.30 to 4.10	3.71	Pass
	20 ms	m/s	4.40 to 5.40	4.91	Pass
	25 ms	m/s	5.40 to 6.10	5.55	Pass
	25-100 ms	m/s	5.50 to 6.20	5.56	Pass
Maximum D-Plane Rotation		deg	71 to 81	73	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	66	Pass
Maximum Occipital Condyle Moment during Rotation Interval Nm			-44 to -36	-41	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	121	Pass
Overall Test Results				Pass	

  
 Laboratory Technician

1/19/10  
 Test Date

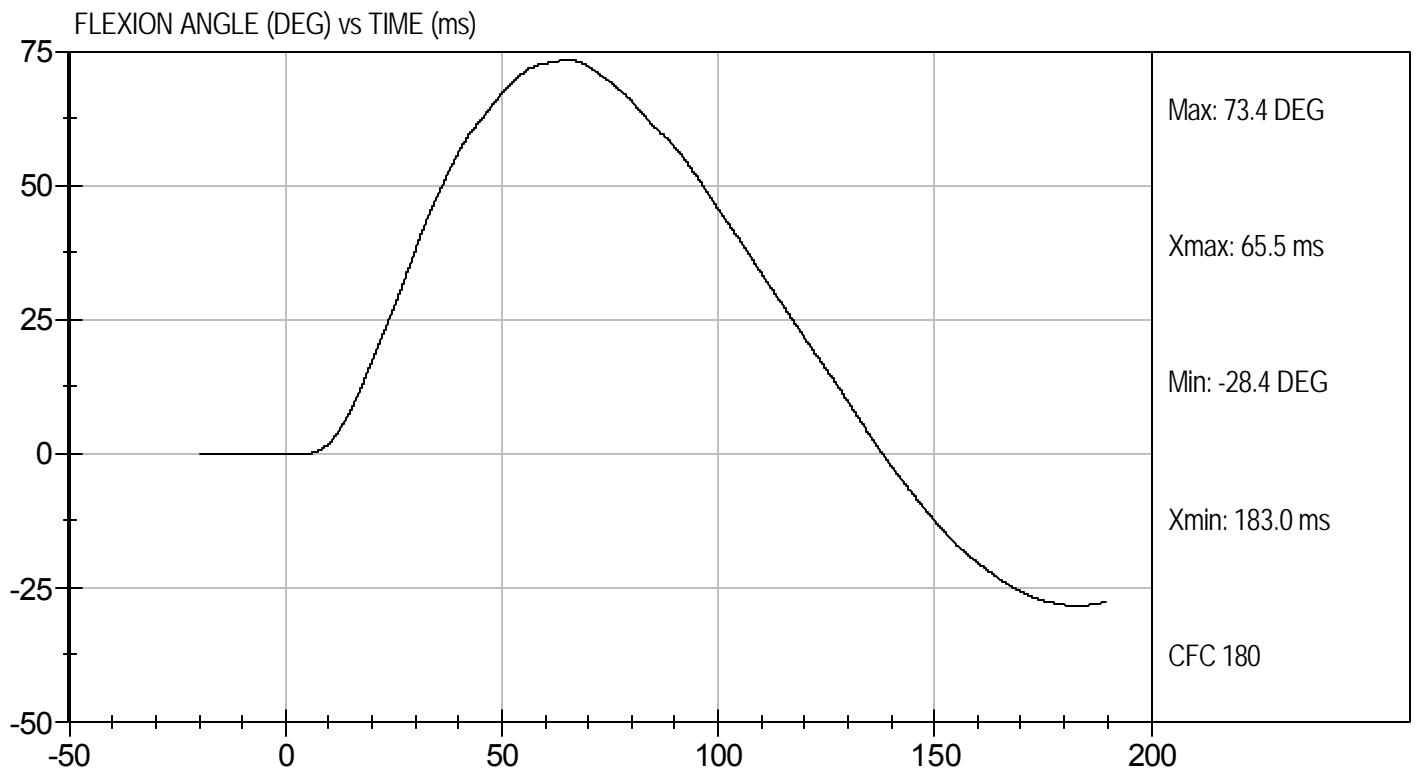
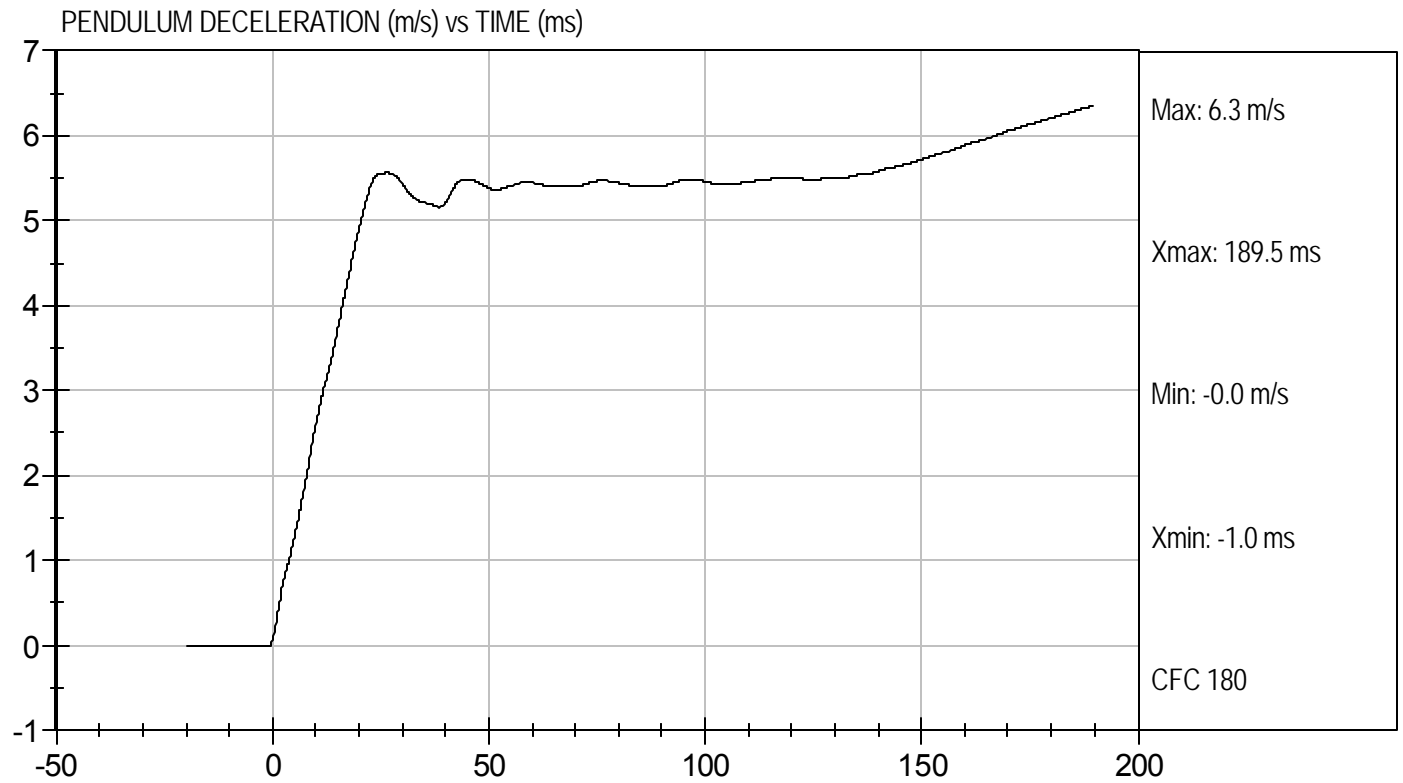
  
 Approved By





Test Desc: Neck Bending  
Component ID: D10102

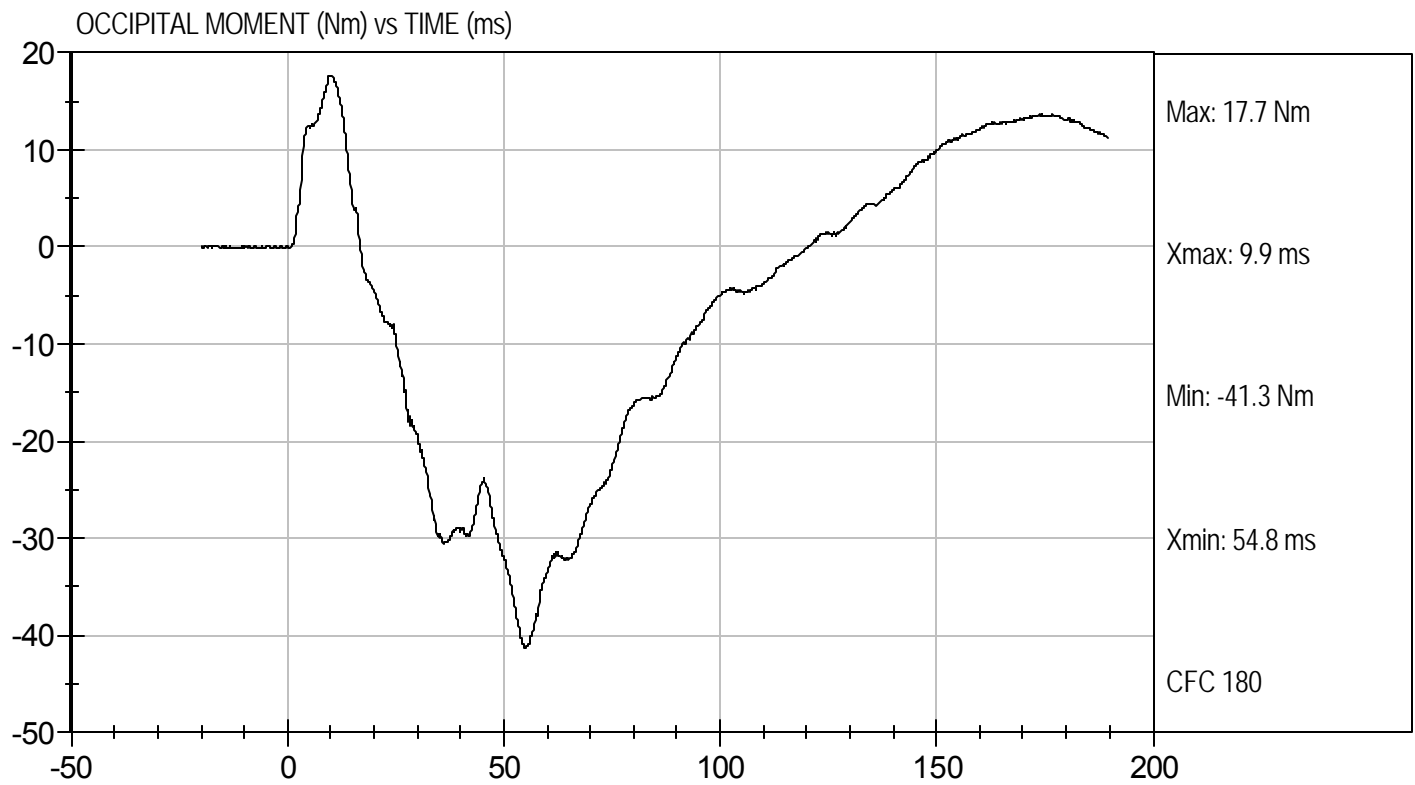
Test Date: 1/19/10  
Velocity: 18.42 ft/s, 5.61 m/s





Test Desc: Neck Bending  
Component ID: D10102

Test Date: 1/19/10  
Velocity: 18.42 ft/s, 5.61 m/s

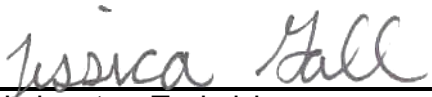


**MGA RESEARCH CORPORATION**  
**SHOULDER IMPACT TEST**  
**SID-Is BUILD LEVEL D DUMMY**


**ATD Serial No:** 262

**Test ID:** D10103

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	22.1	Pass
Laboratory Relative Humidity	%	10 to 70	21	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Maximum Probe Acceleration	G's	13 to 18	15	Pass
Shoulder Displacement	mm	28 to 37	33	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	18	Pass
Overall Test Results				Pass

  
Laboratory Technician

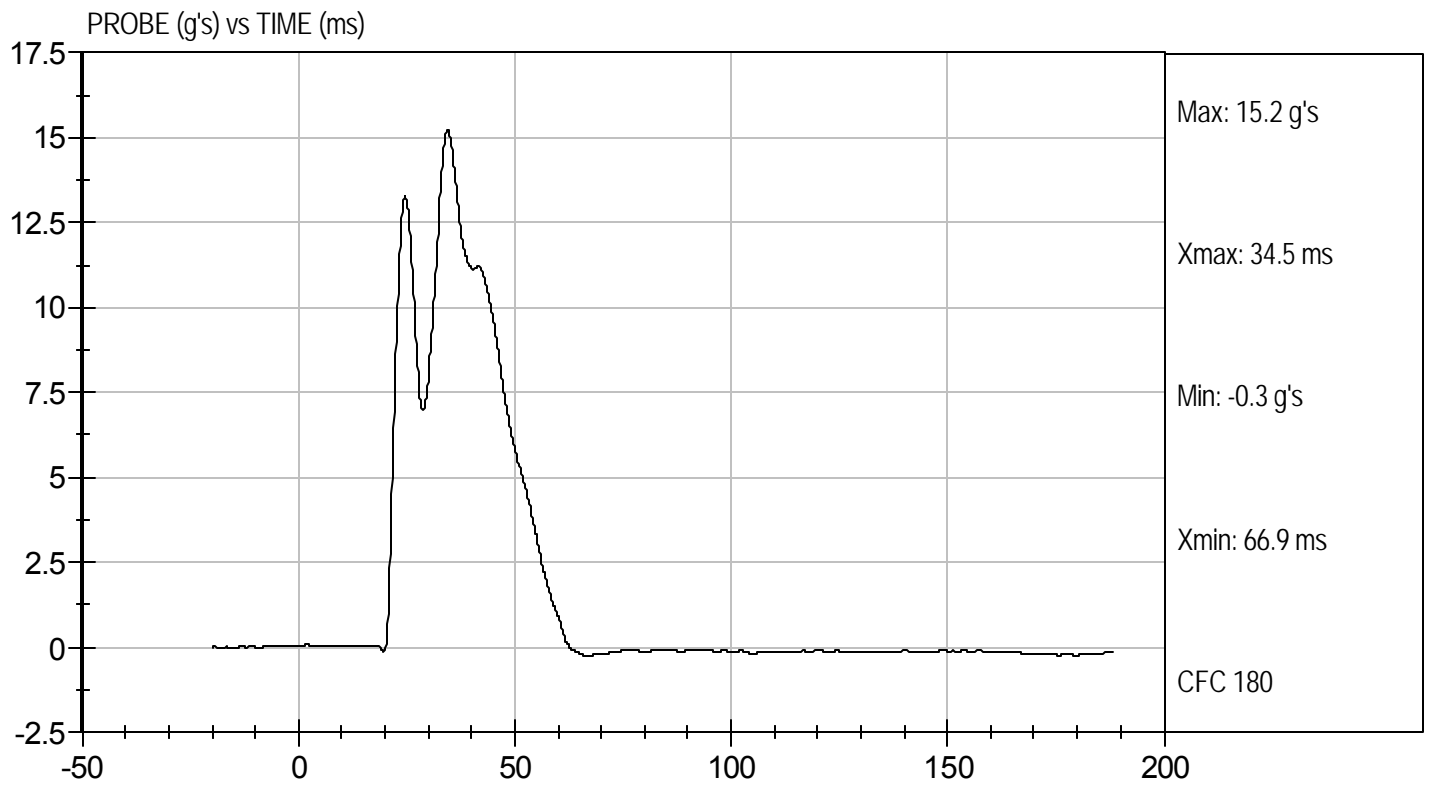
1/25/10  
Test Date

  
Approved By



Test Desc: Shoulder Impact  
Component ID: D10103

Test Date: 1/25/10  
Velocity: 14.12 ft/s, 4.30 m/s

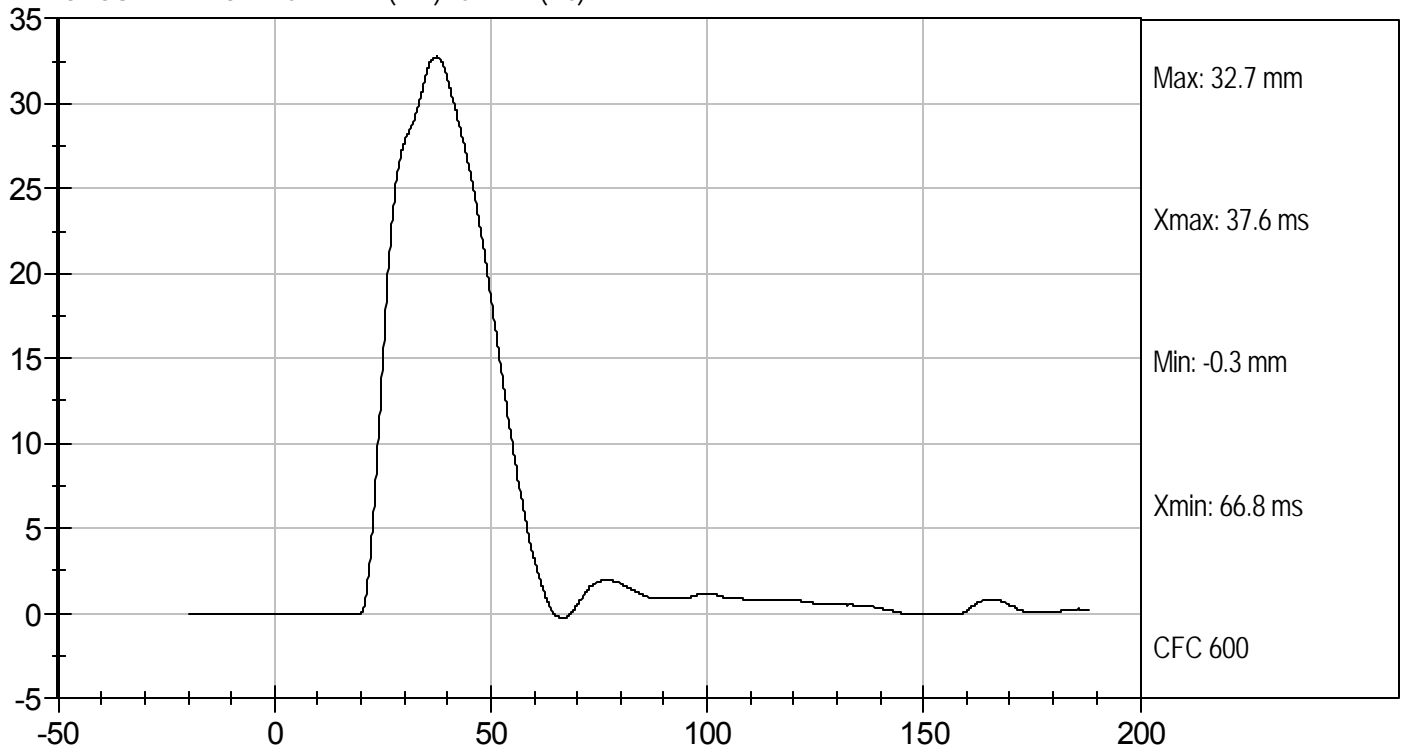




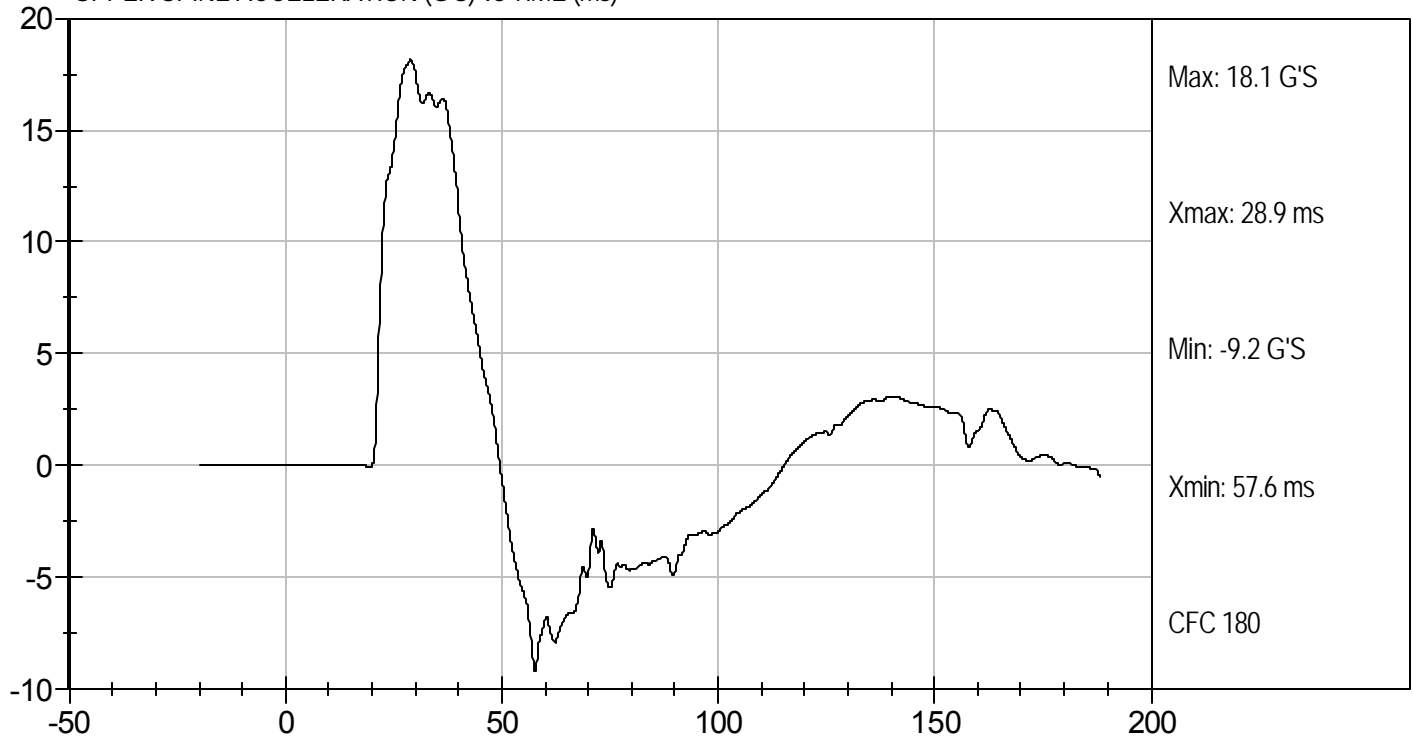
Test Desc: Shoulder Impact  
Component ID: D10103

Test Date: 1/25/10  
Velocity: 14.12 ft/s, 4.30 m/s

SHOULDER DISPLACEMENT (mm) vs TIME (ms)



UPPER SPINE ACCELERATION (G'S) vs TIME (ms)

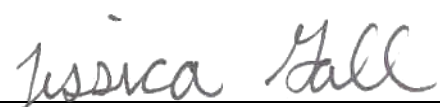


**MGA RESEARCH CORPORATION**  
**THORAX (WITH ARM) IMPACT TEST**  
**SID-IIs BUILD LEVEL D DUMMY**


**ATD Serial No:** 262

**Test I.D:** D10104

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	22	Pass
Impact Velocity	m/s	6.60 to 6.80	6.69	Pass
Peak Impactor Acceleration	G's	30 to 36	32	Pass
Shoulder Displacement	mm	31 to 40	36	Pass
Upper Rib Displacement	mm	25 to 32	27	Pass
Middle Rib Displacement	mm	30 to 36	31	Pass
Lower Rib Displacement	mm	32 to 38	33	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	37	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	30	Pass
Overall Test Results			Pass	

  
 Laboratory Technician

1/25/10  
 Test Date

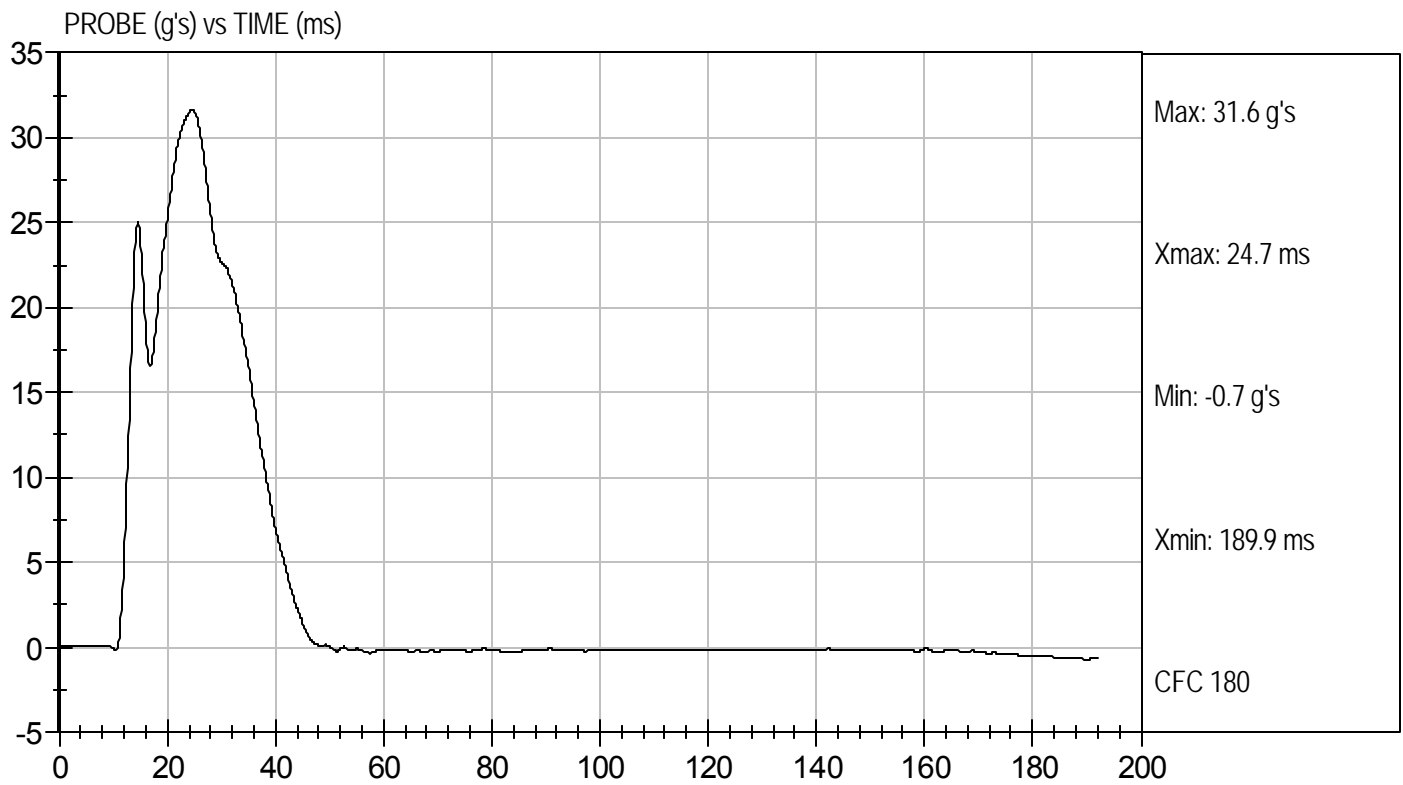
  
 Approved By





Test Desc: Thorax With Arm  
Component ID: D10104

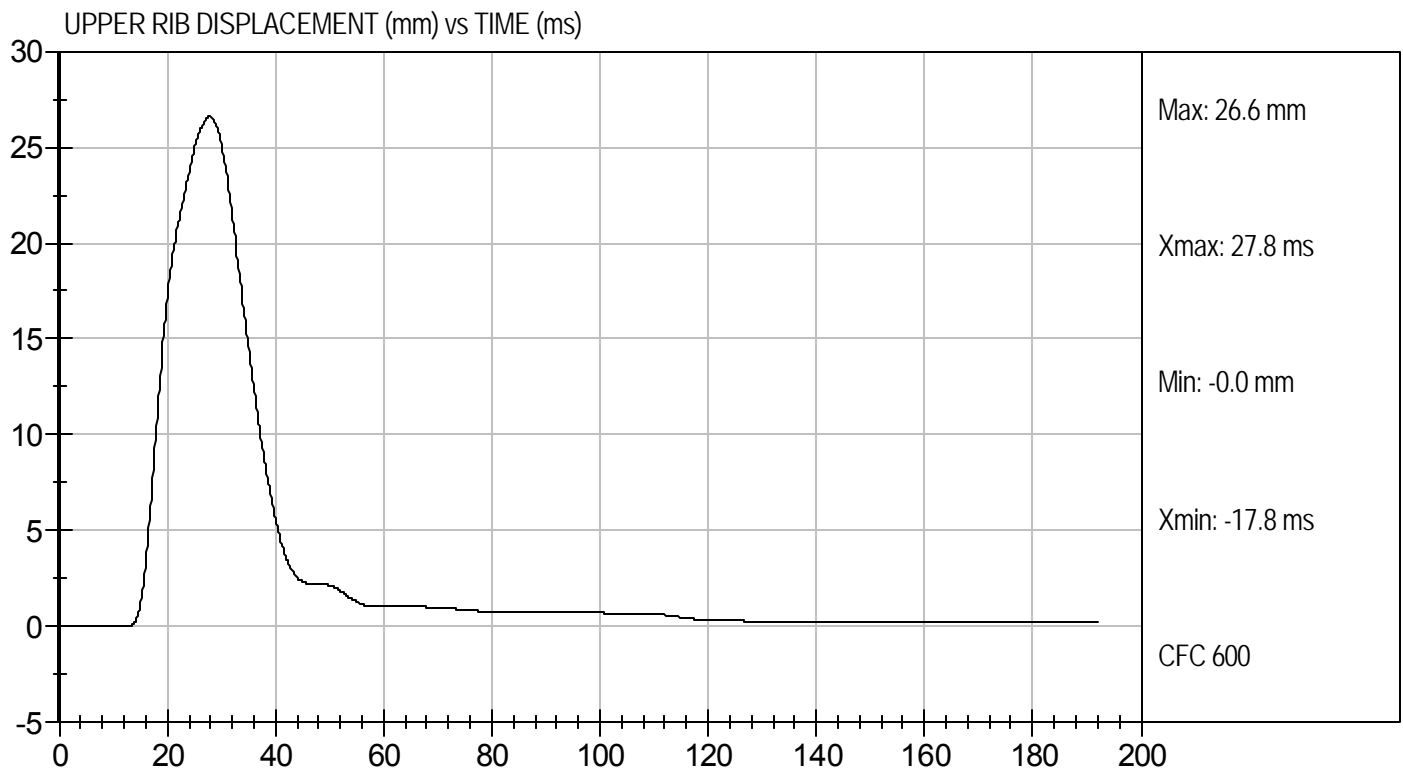
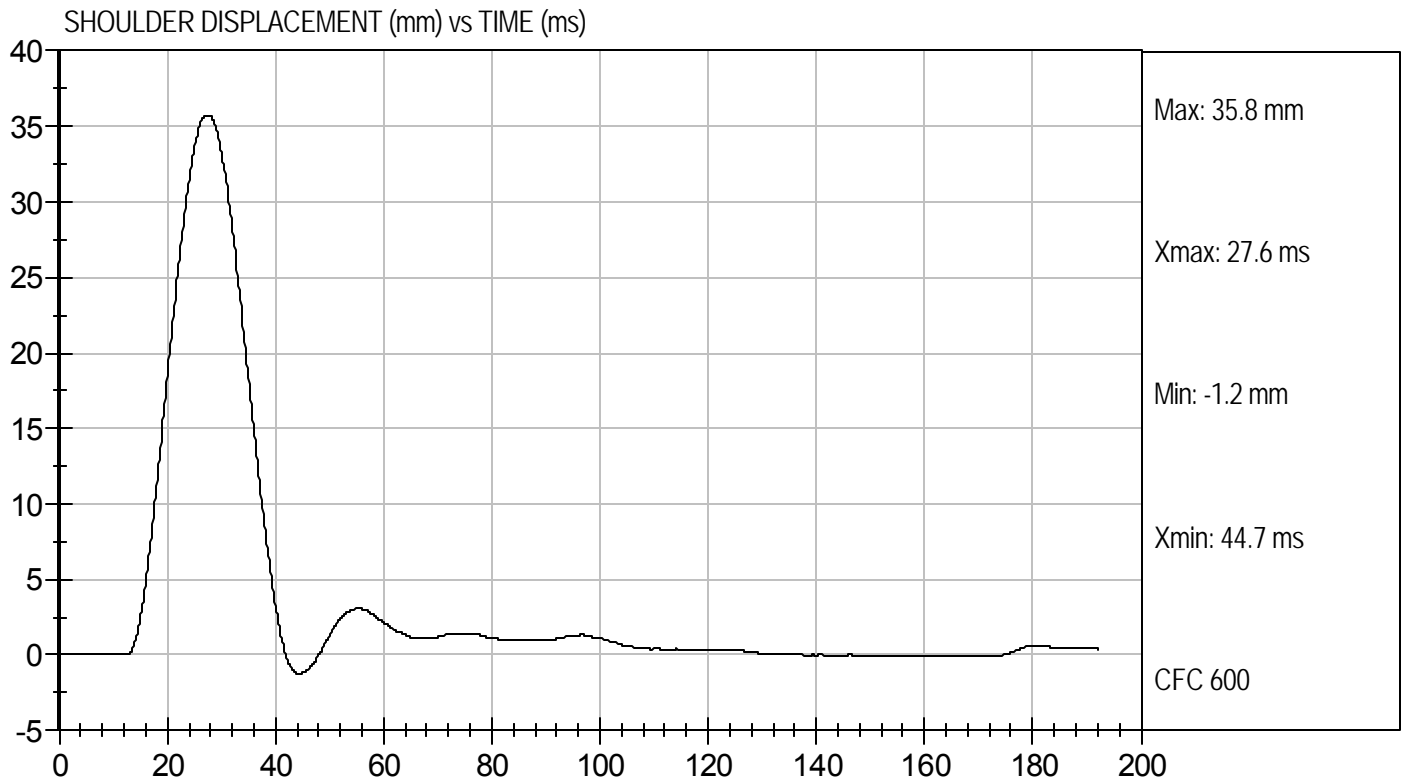
Test Date: 1/25/10  
Velocity: 21.96 ft/s, 6.69 m/s





Test Desc: Thorax With Arm  
Component ID: D10104

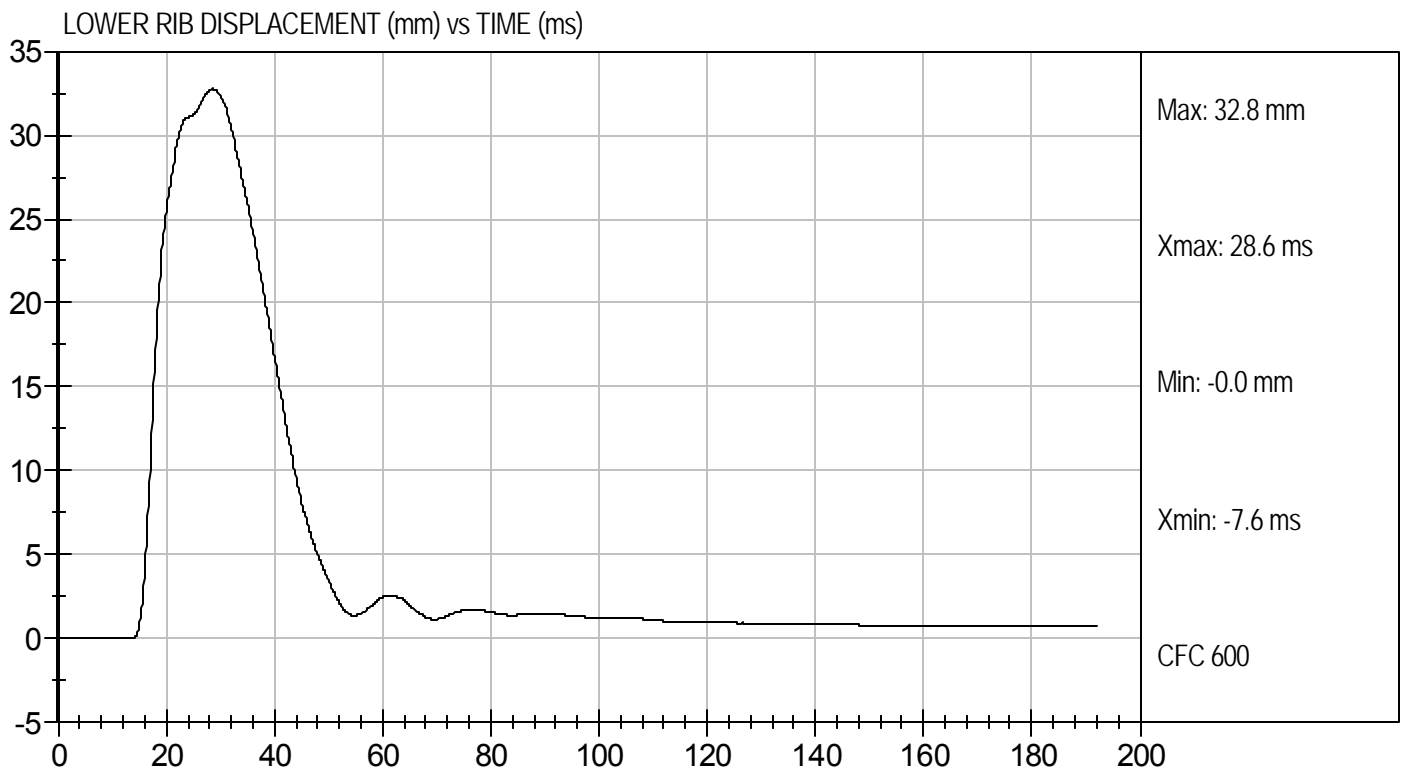
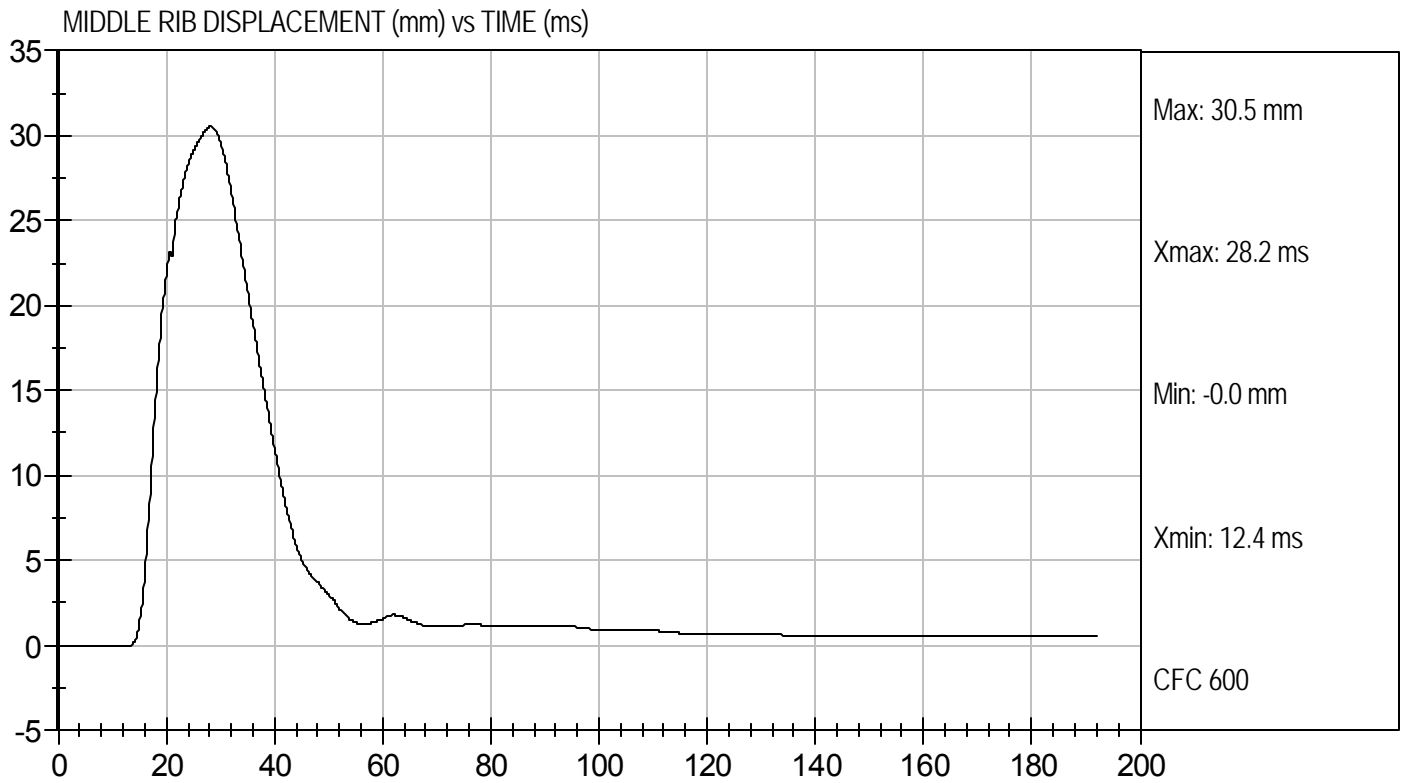
Test Date: 1/25/10  
Velocity: 21.96 ft/s, 6.69 m/s





Test Desc: Thorax With Arm  
Component ID: D10104

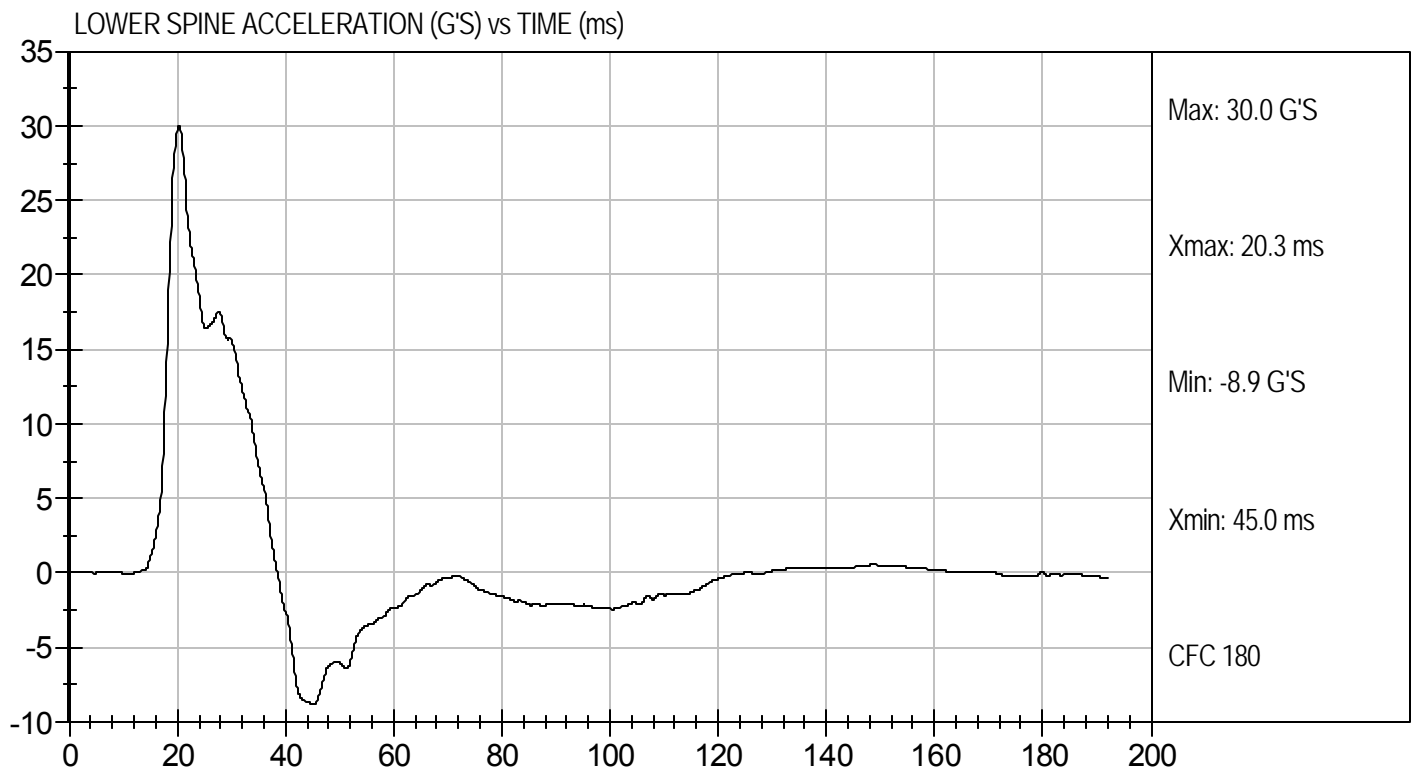
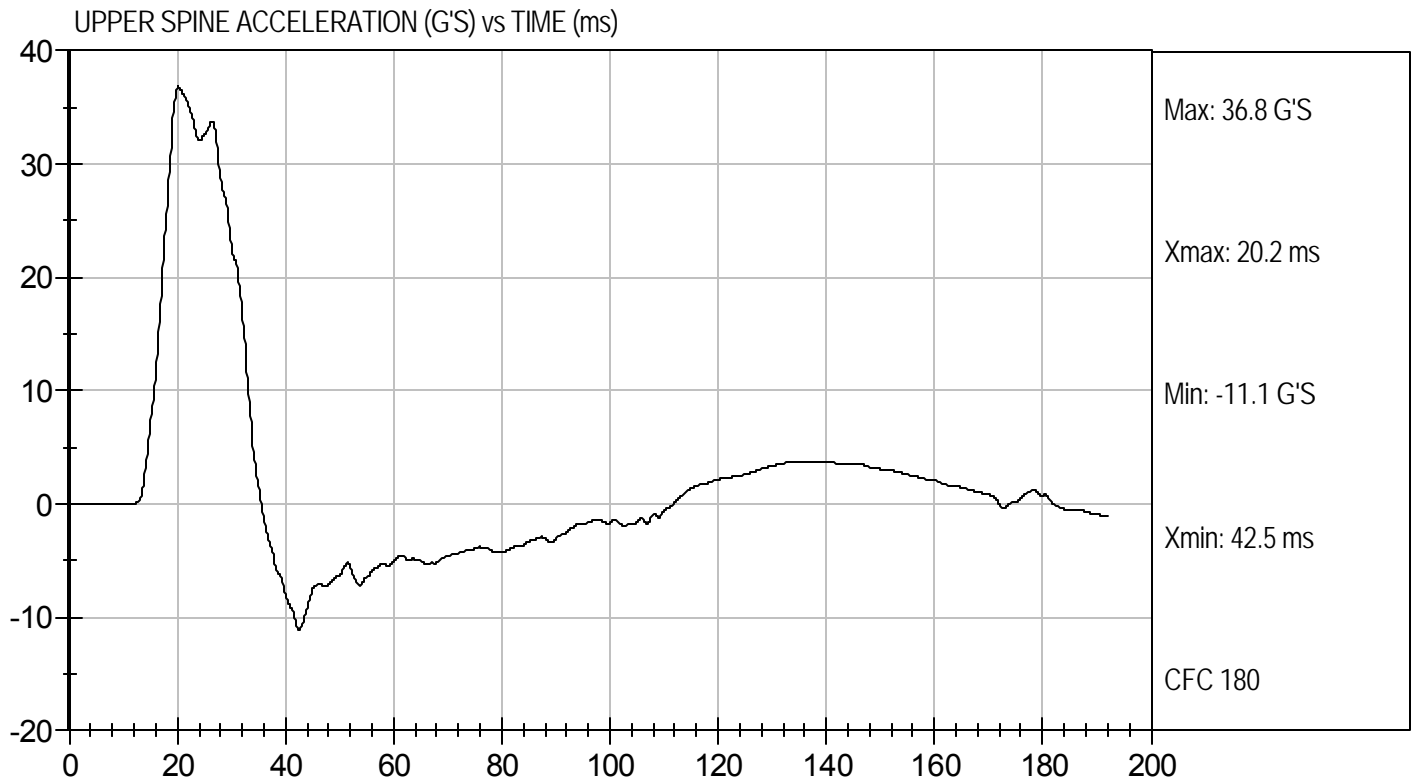
Test Date: 1/25/10  
Velocity: 21.96 ft/s, 6.69 m/s





Test Desc: Thorax With Arm  
Component ID: D10104

Test Date: 1/25/10  
Velocity: 21.96 ft/s, 6.69 m/s



**MGA RESEARCH CORPORATION**  
**THORAX (WITHOUT ARM) IMPACT TEST**  
**SID-11s BUILD LEVEL D DUMMY**

**ATD Serial No:** 262

**Test I.D:** D10105

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.3	Pass
Humidity	%	10 to 70	23	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Peak Impactor Force	G's	14 to 18	17	Pass
Upper Rib Displacement	mm	32 to 40	33	Pass
Middle Rib Displacement	mm	39 to 45	39	Pass
Lower Rib Displacement	mm	35 to 43	35	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	16	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	10	Pass
Overall Test Results				Pass

  
Laboratory Technician

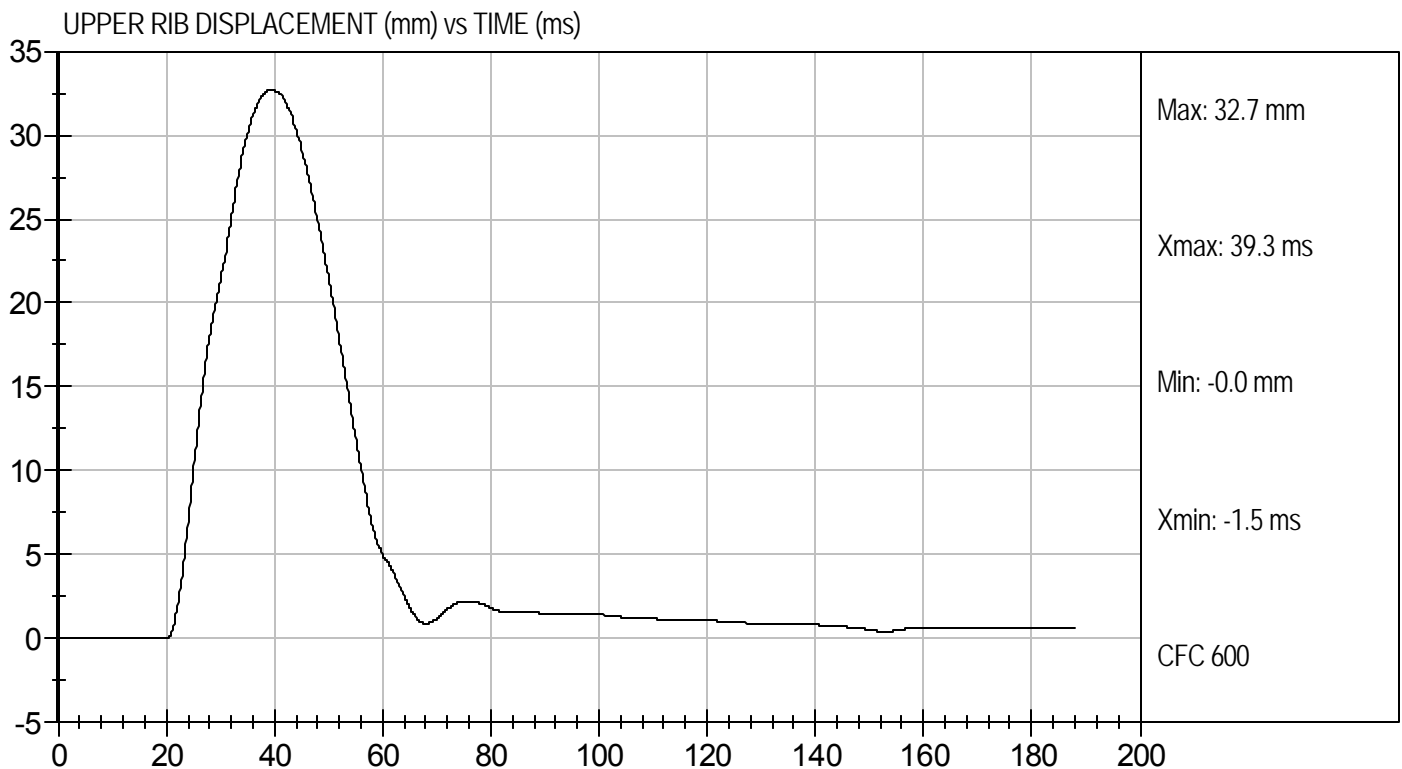
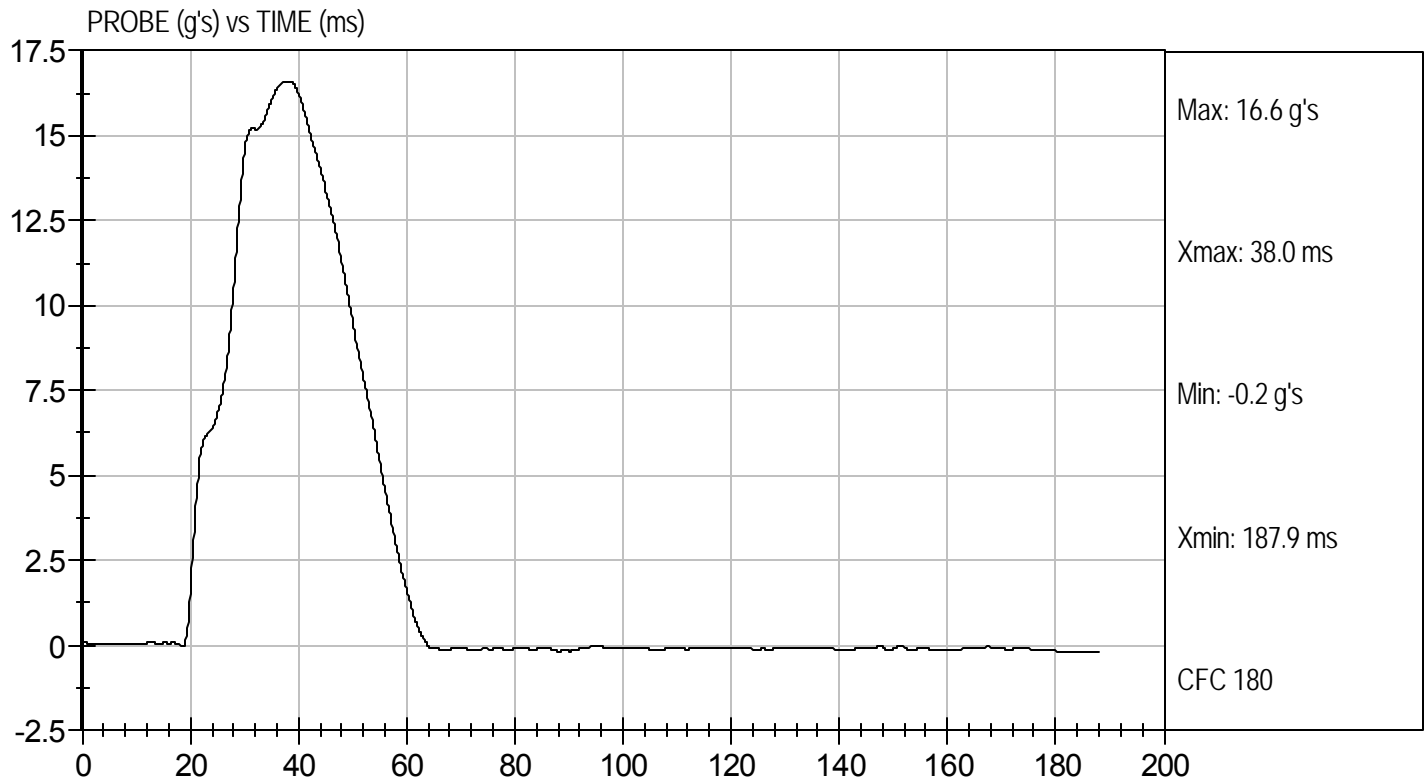
1/25/10  
Test Date

  
Approved By



Test Desc: Thorax Without Arm  
Component ID: D10105

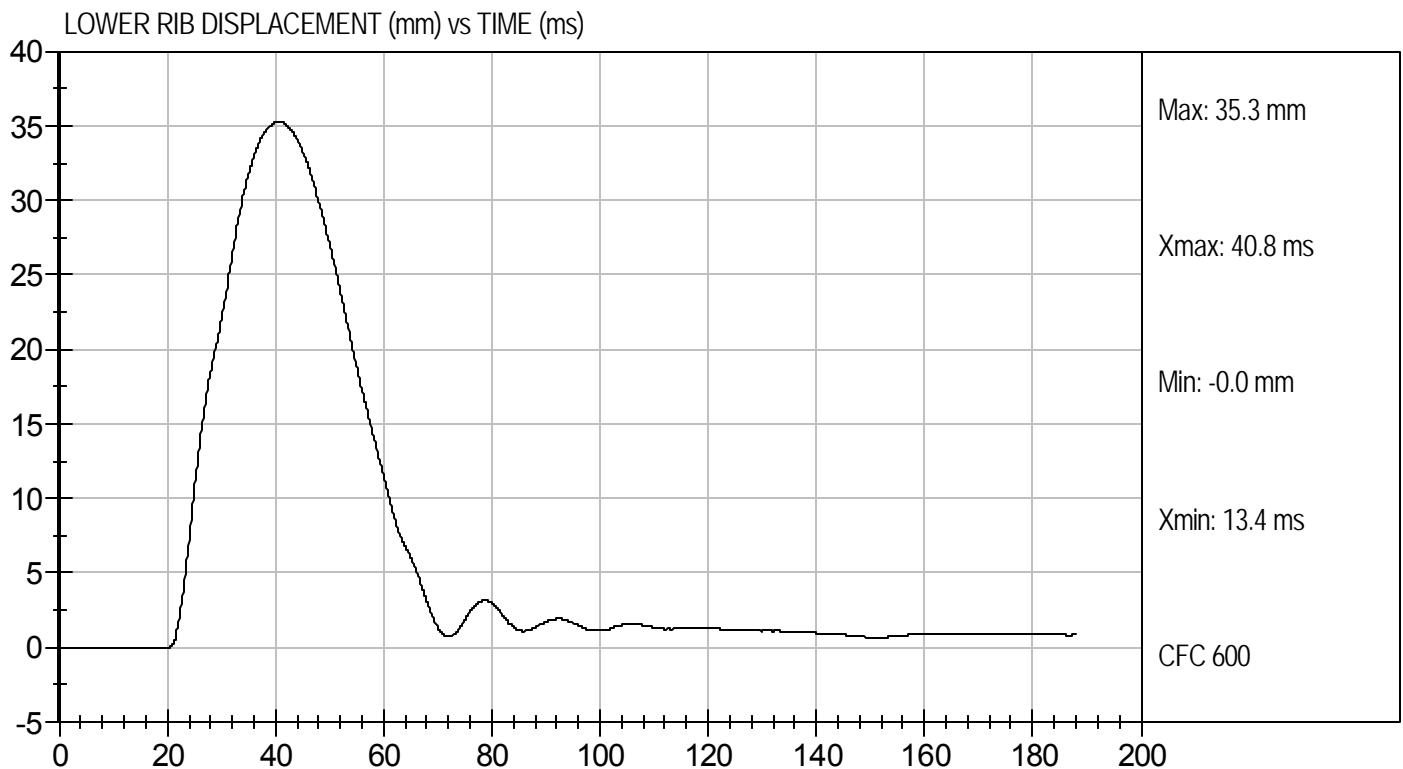
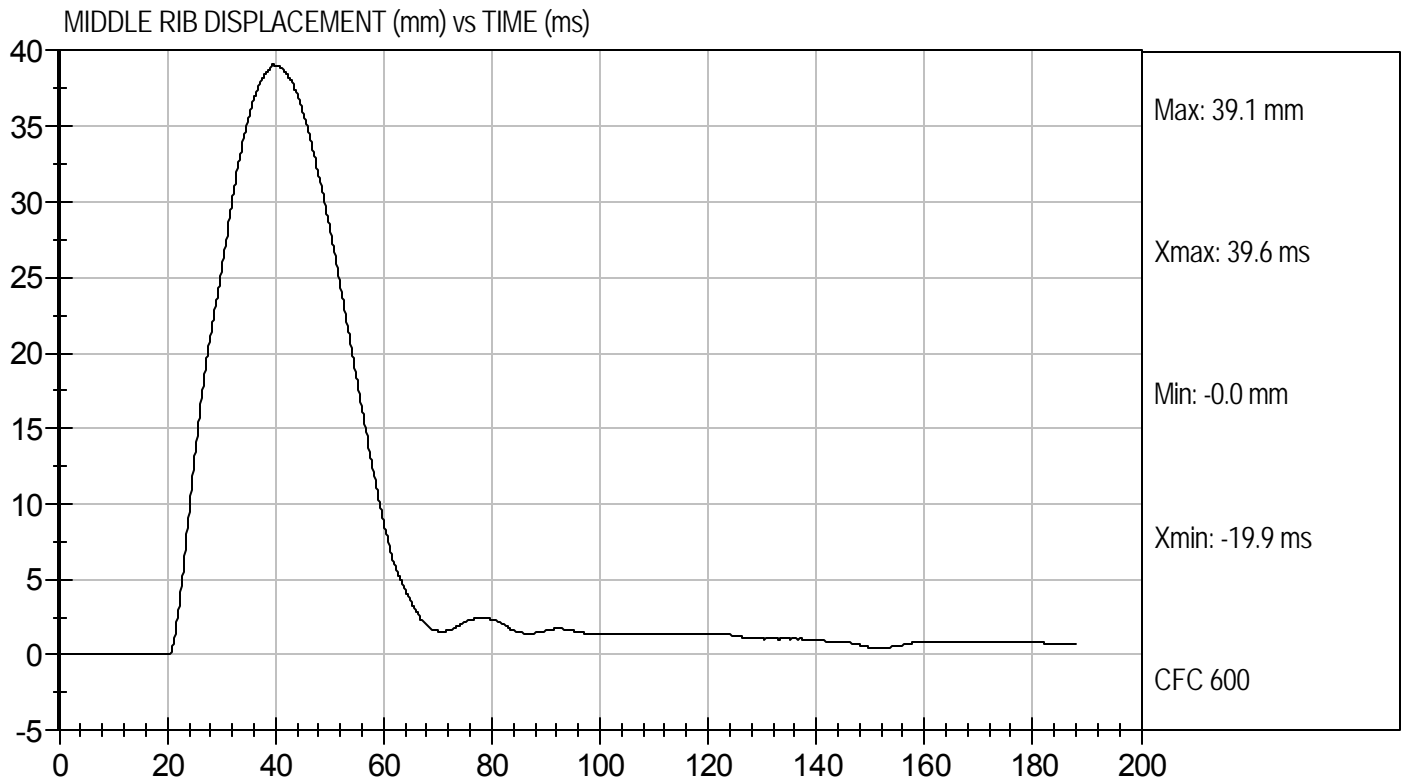
Test Date: 1/25/10  
Velocity: 14.37 ft/s, 4.38 m/s





Test Desc: Thorax Without Arm  
Component ID: D10105

Test Date: 1/25/10  
Velocity: 14.37 ft/s, 4.38 m/s

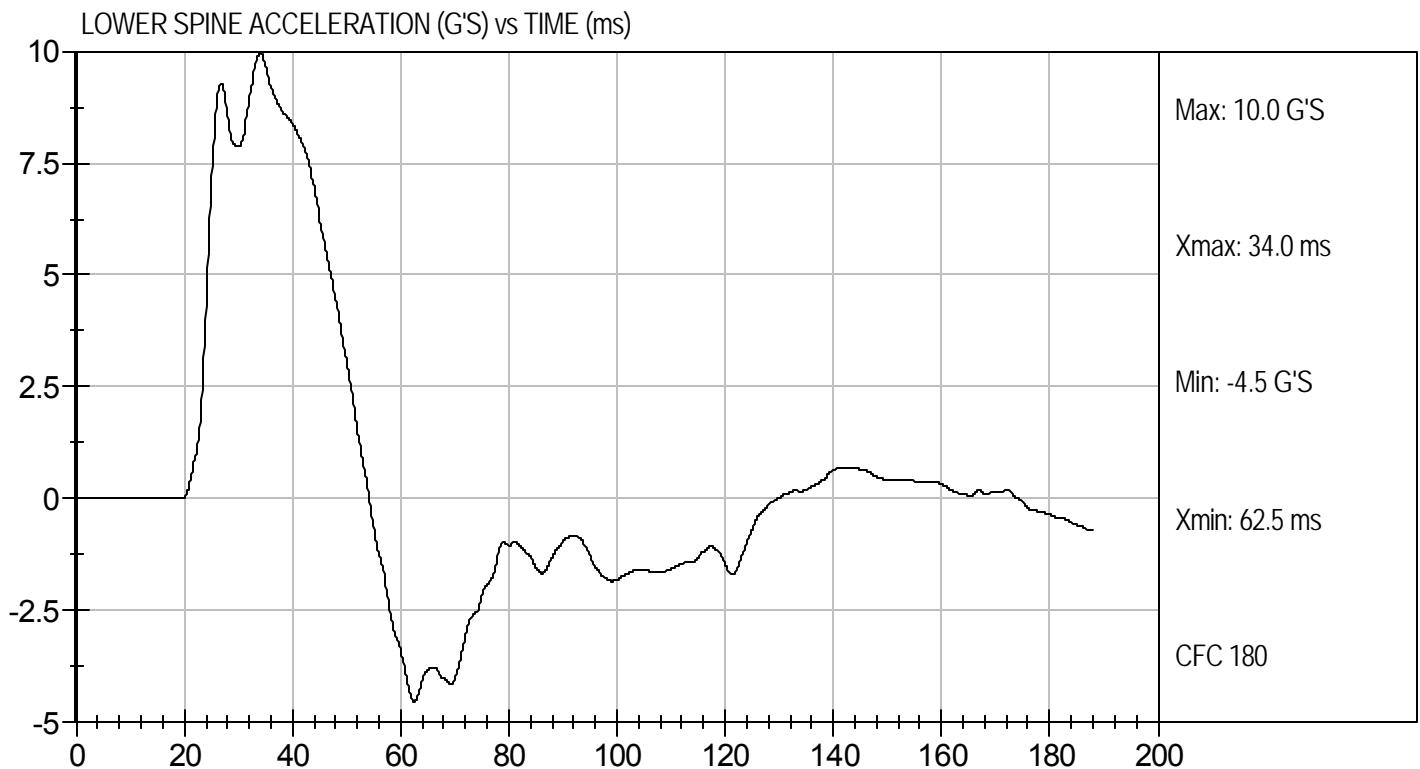
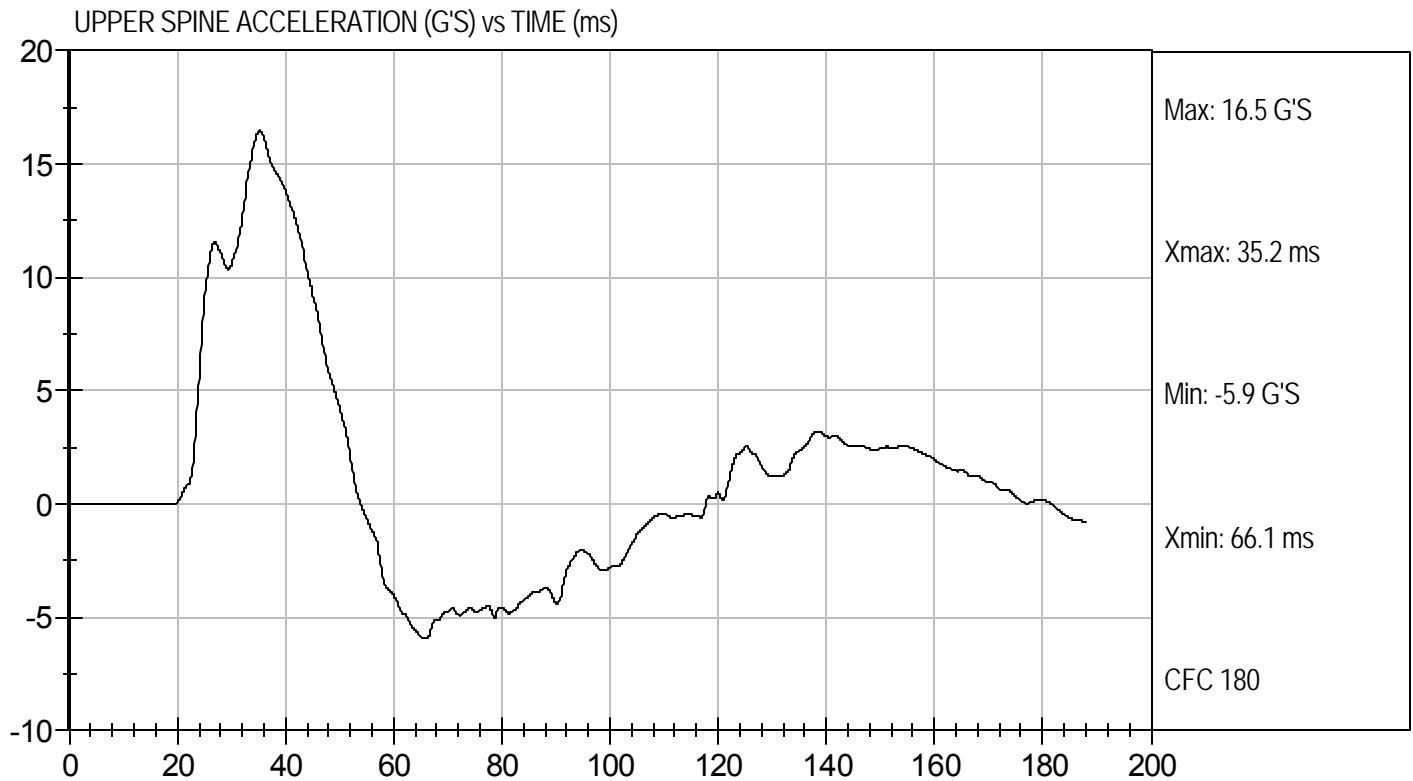






Test Desc: Thorax Without Arm  
Component ID: D10105

Test Date: 1/25/10  
Velocity: 14.37 ft/s, 4.38 m/s



**MGA RESEARCH CORPORATION**  
**ABDOMINAL IMPACT TEST**  
**SID-IIs BUILD LEVEL D DUMMY**


**ATD Serial No:** 262

**Test I.D:** D10106

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	22.1	Pass
Humidity	%	10 to 70	21	Pass
Impact Velocity	m/s	4.20 to 4.40	4.27	Pass
Peak Impactor Acceleration	G's	12 to 16	13	Pass
Upper Rib Displacement	mm	36 to 47	41	Pass
Lower Rib Displacement	mm	33 to 44	39	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	10	Pass
Overall Test Results				Pass

  
Laboratory Technician

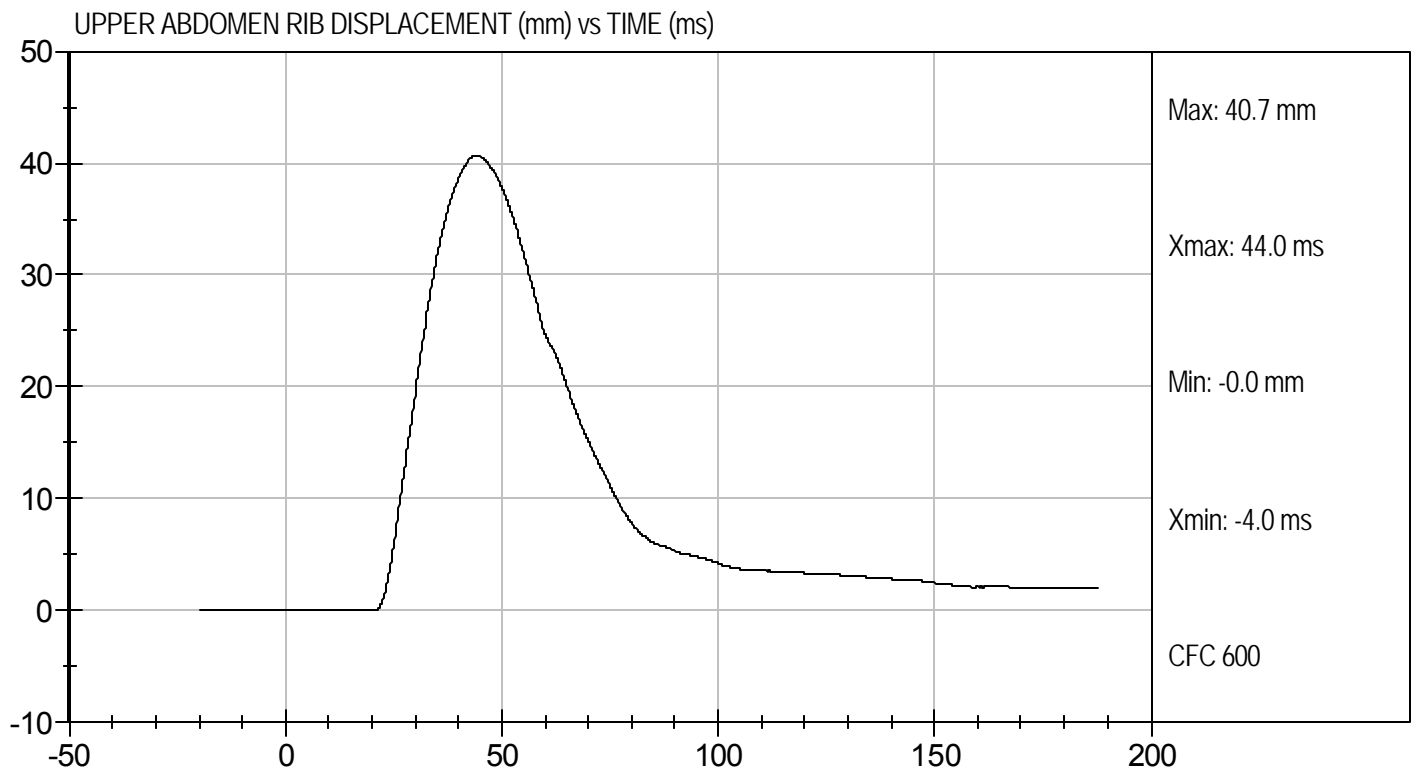
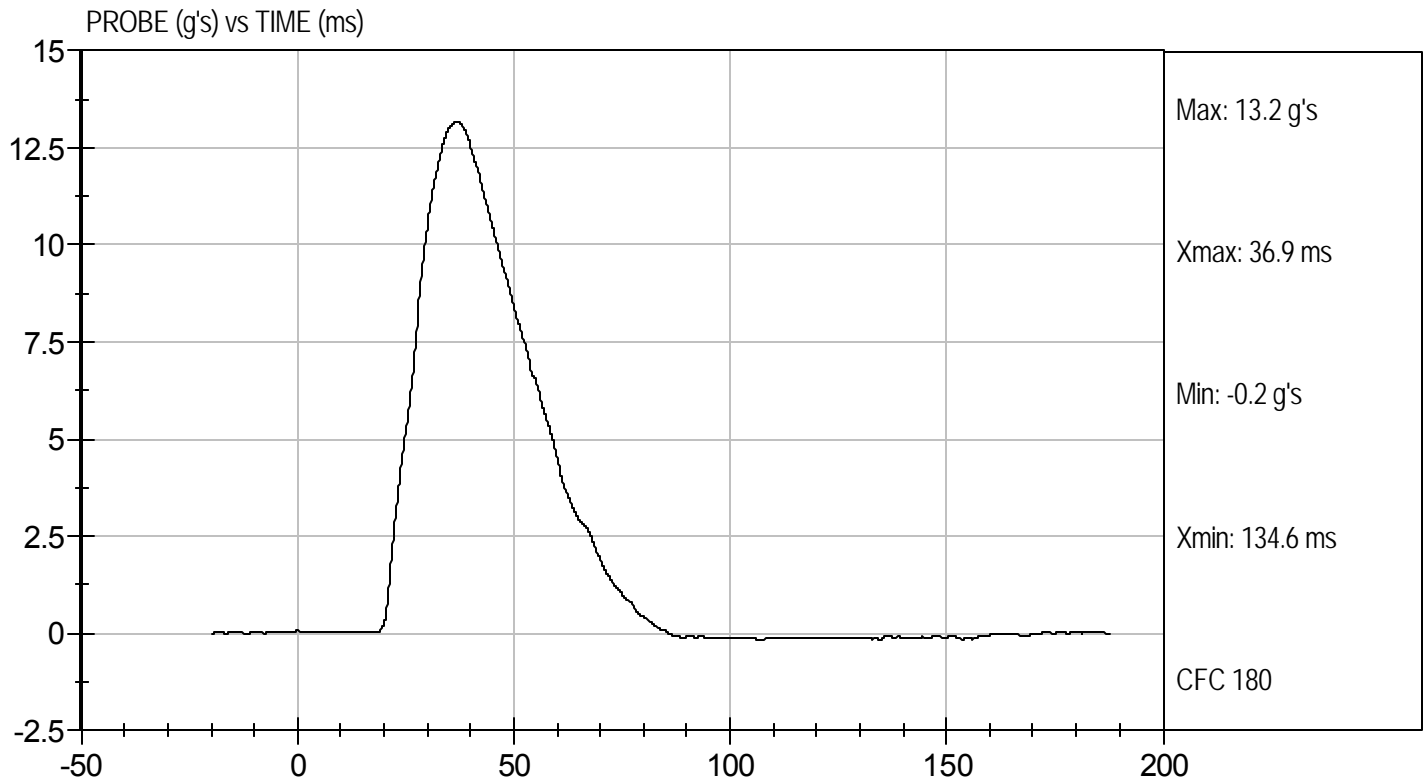
1/25/10  
Test Date

  
Approved By



Test Desc: Abdomen Impact  
Component ID: D10106

Test Date: 1/25/10  
Velocity: 14.01 ft/s, 4.27 m/s

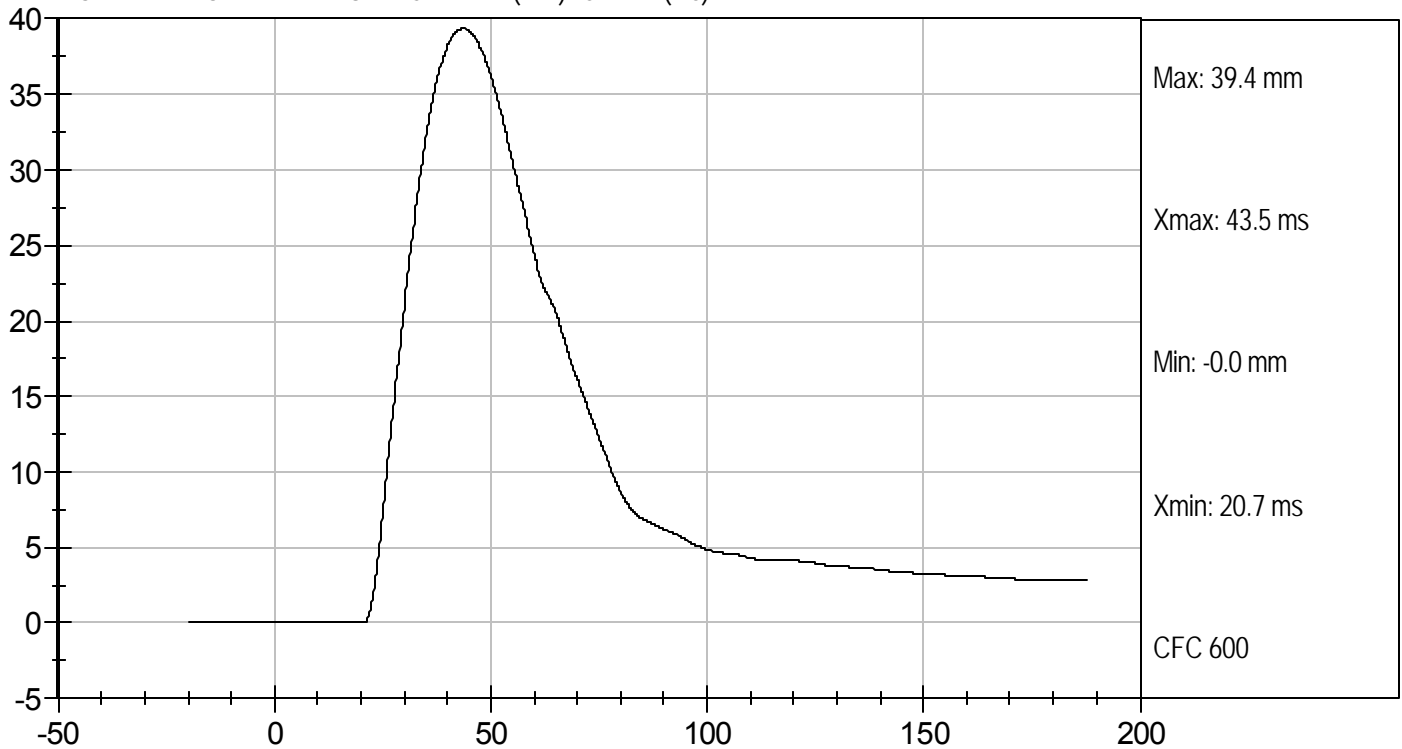




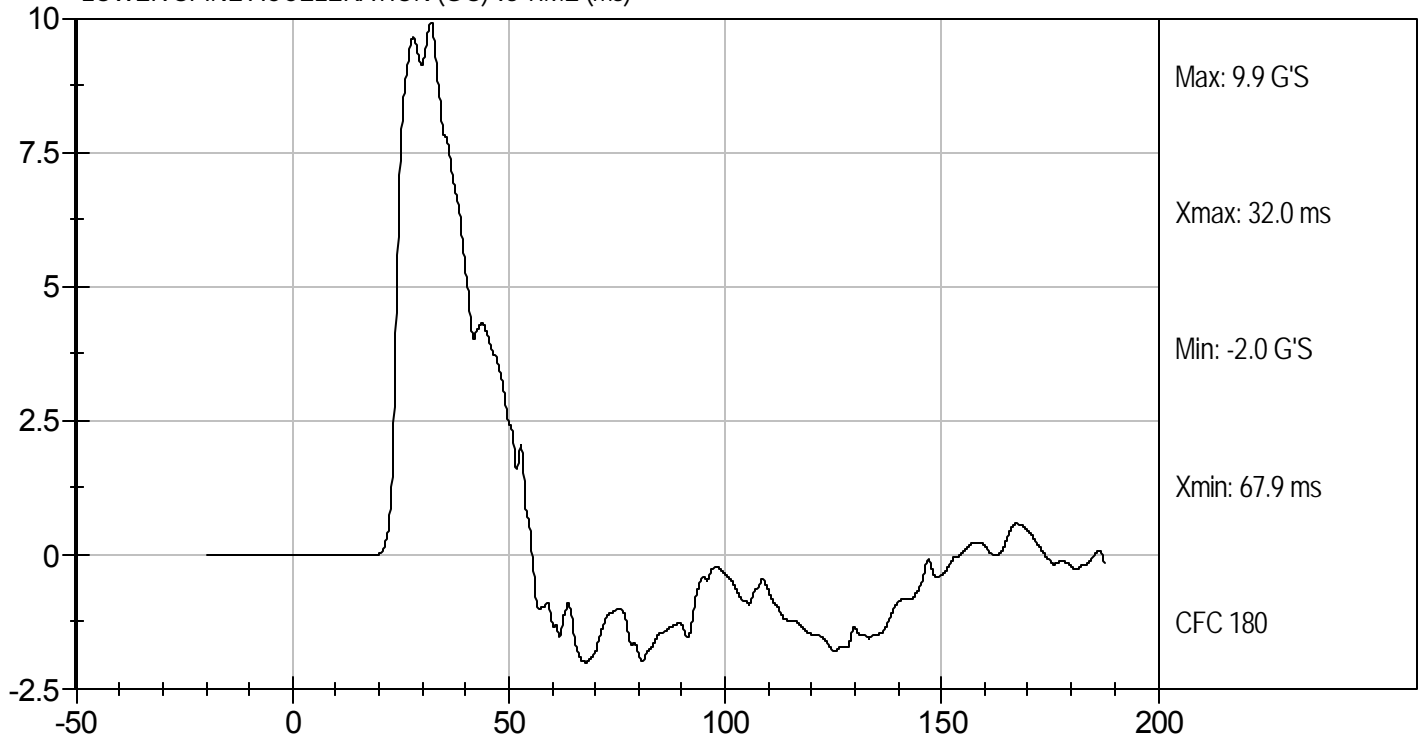
Test Desc: Abdomen Impact  
Component ID: D10106

Test Date: 1/25/10  
Velocity: 14.01 ft/s, 4.27 m/s

LOWER ABDOMEN RIB DISPLACEMENT (mm) vs TIME (ms)



LOWER SPINE ACCELERATION (G'S) vs TIME (ms)



**MGA RESEARCH CORPORATION**  
**PELVIS IMPACT TEST**  
**SID-IIs BUILD LEVEL D DUMMY**


**ATD Serial No:** 262

**Test I.D:** D10107

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	22.1	Pass
Humidity	%	10 to 70	21	Pass
Impact Velocity	m/s	6.60 to 6.80	6.69	Pass
Peak Impactor Acceleration	G's	38 to 47	44	Pass
Pelvis Y Acceleration after 6 ms	G's	34 to 42	41	Pass
Peak Acetabulum Force	N	3600 to 4300	4179	Pass
Overall Test Results				Pass

  
Laboratory Technician

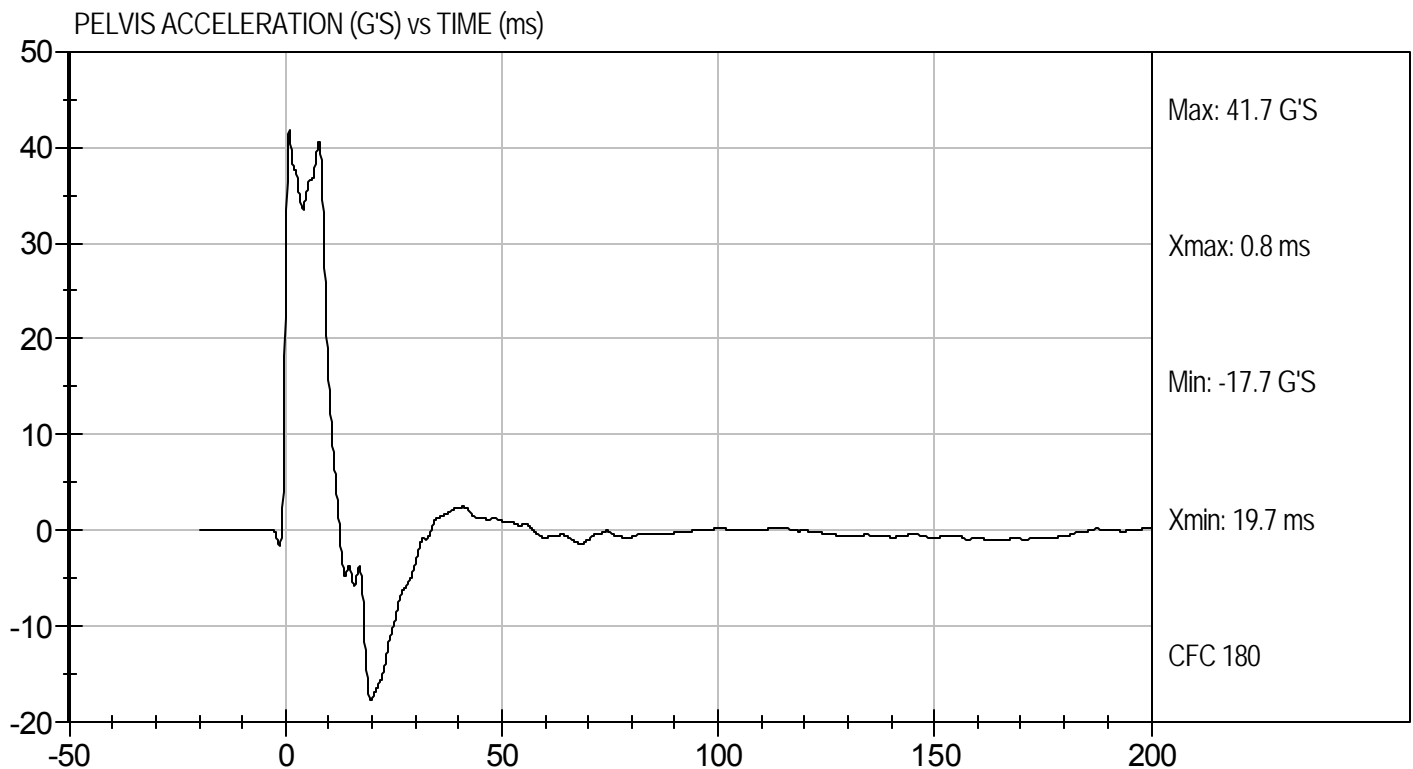
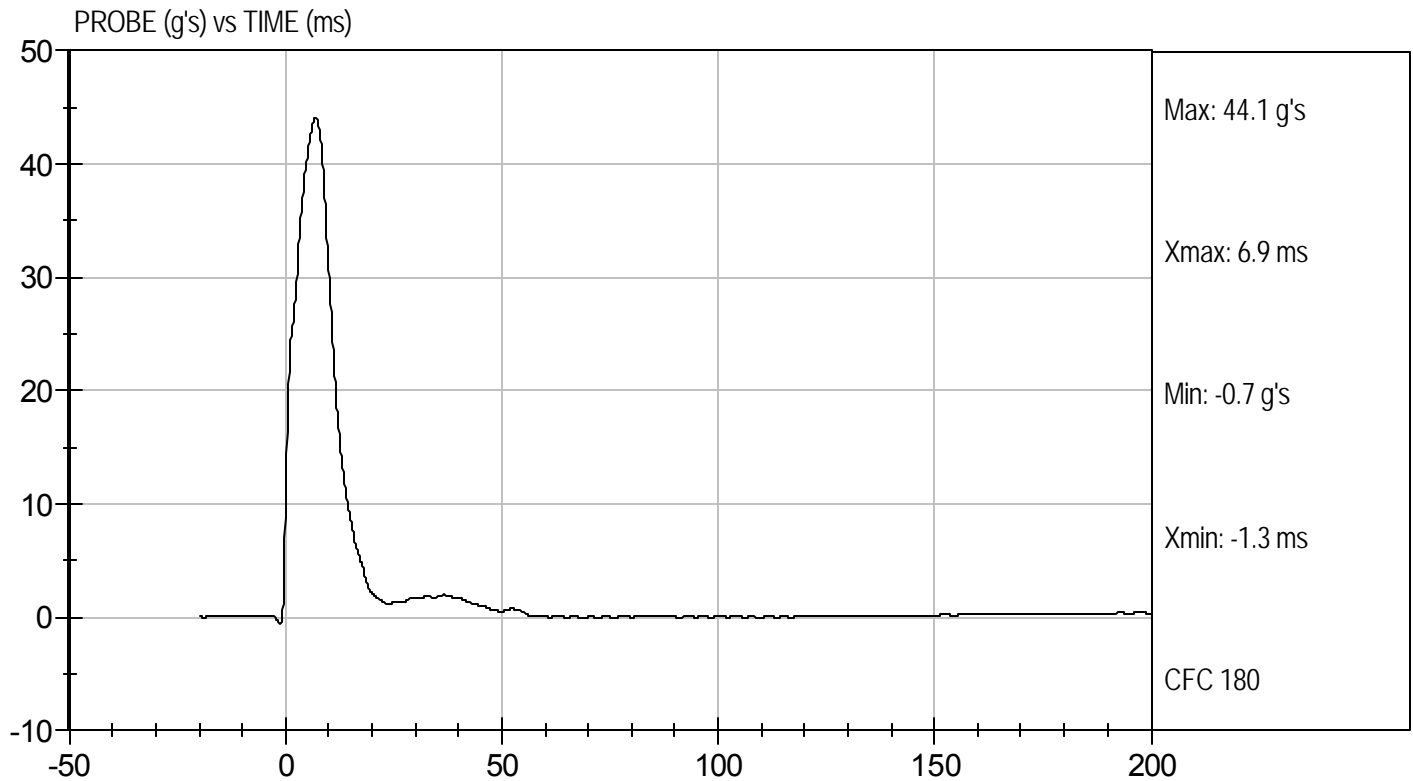
1/25/10  
Test Date

  
Approved By



Test Desc: Pelvis Impact  
Component ID: D10107

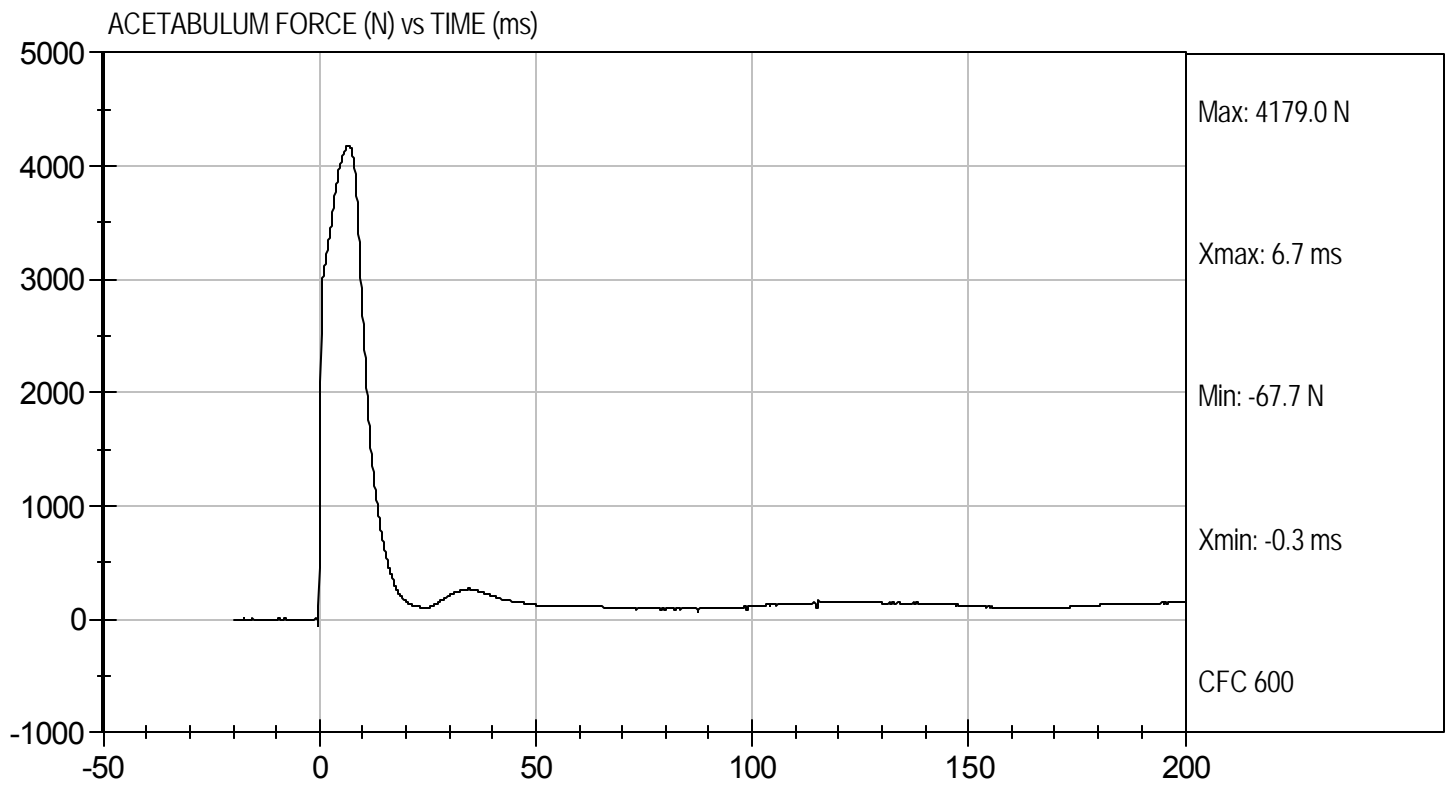
Test Date: 1/25/10  
Velocity: 21.96 ft/s, 6.69 m/s





Test Desc: Pelvis Impact  
Component ID: D10107

Test Date: 1/25/10  
Velocity: 21.96 ft/s, 6.69 m/s





**MGA RESEARCH CORPORATION**  
**ILIAC IMPACT TEST**  
**SID-IIIs BUILD LEVEL D DUMMY**


**ATD Serial No:** 262

**Test I.D:** D10108

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	22	Pass
Impact Velocity	m/s	4.20 to 4.40	4.27	Pass
Peak Impactor Acceleration	G's	36 to 45	37	Pass
Pelvis Y Acceleration	G's	28 to 39	29	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4196	Pass
Overall Test Results			Pass	

  
Laboratory Technician

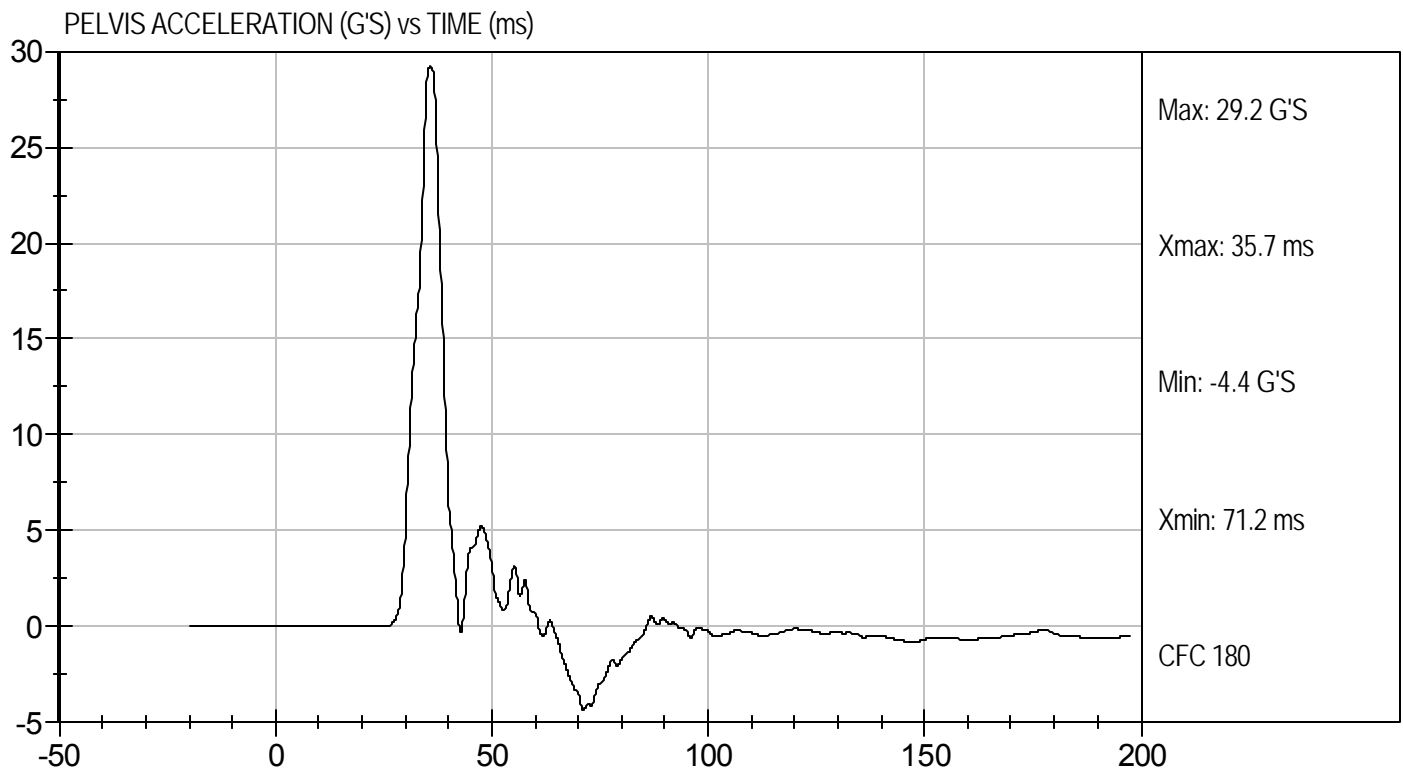
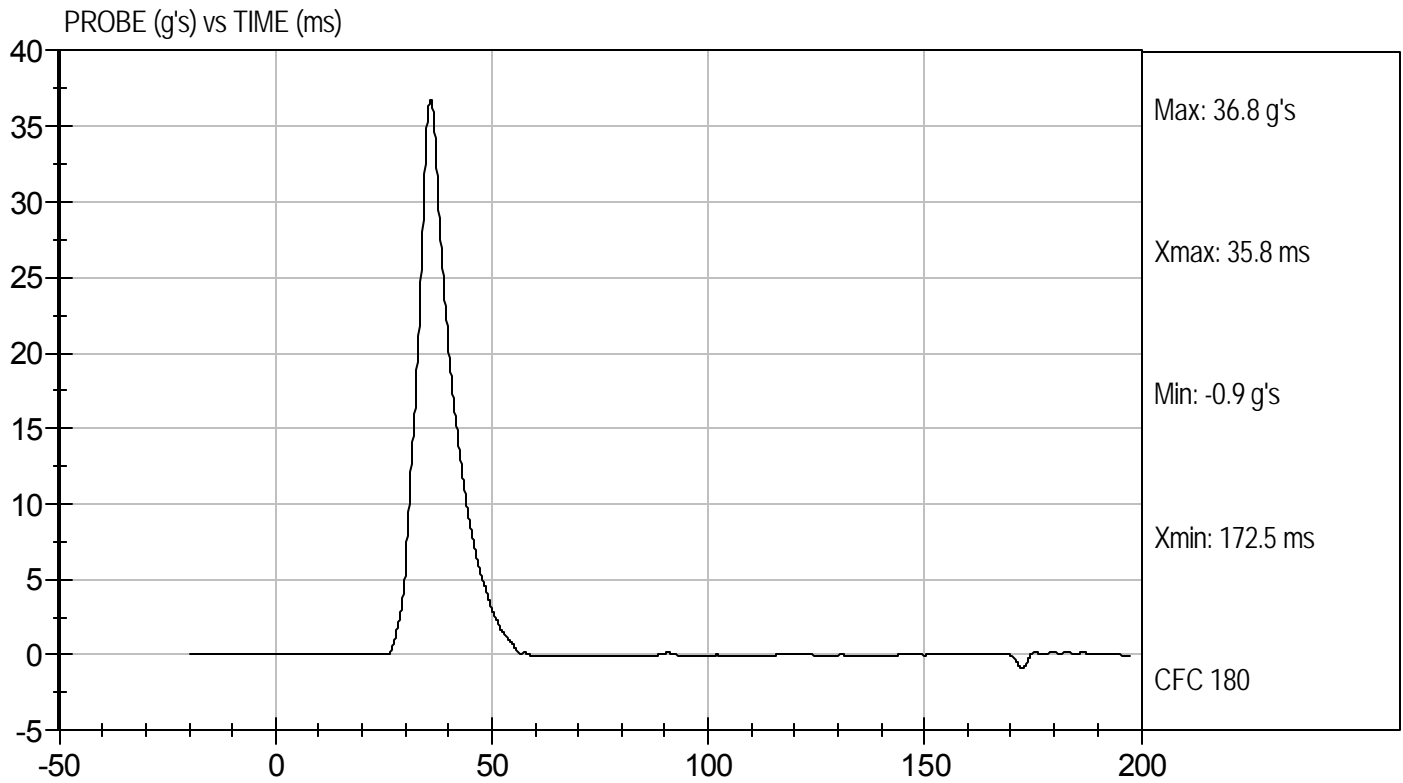
1/25/10  
Test Date

  
Approved By



Test Desc: Iliac Impact  
Component ID: D10108

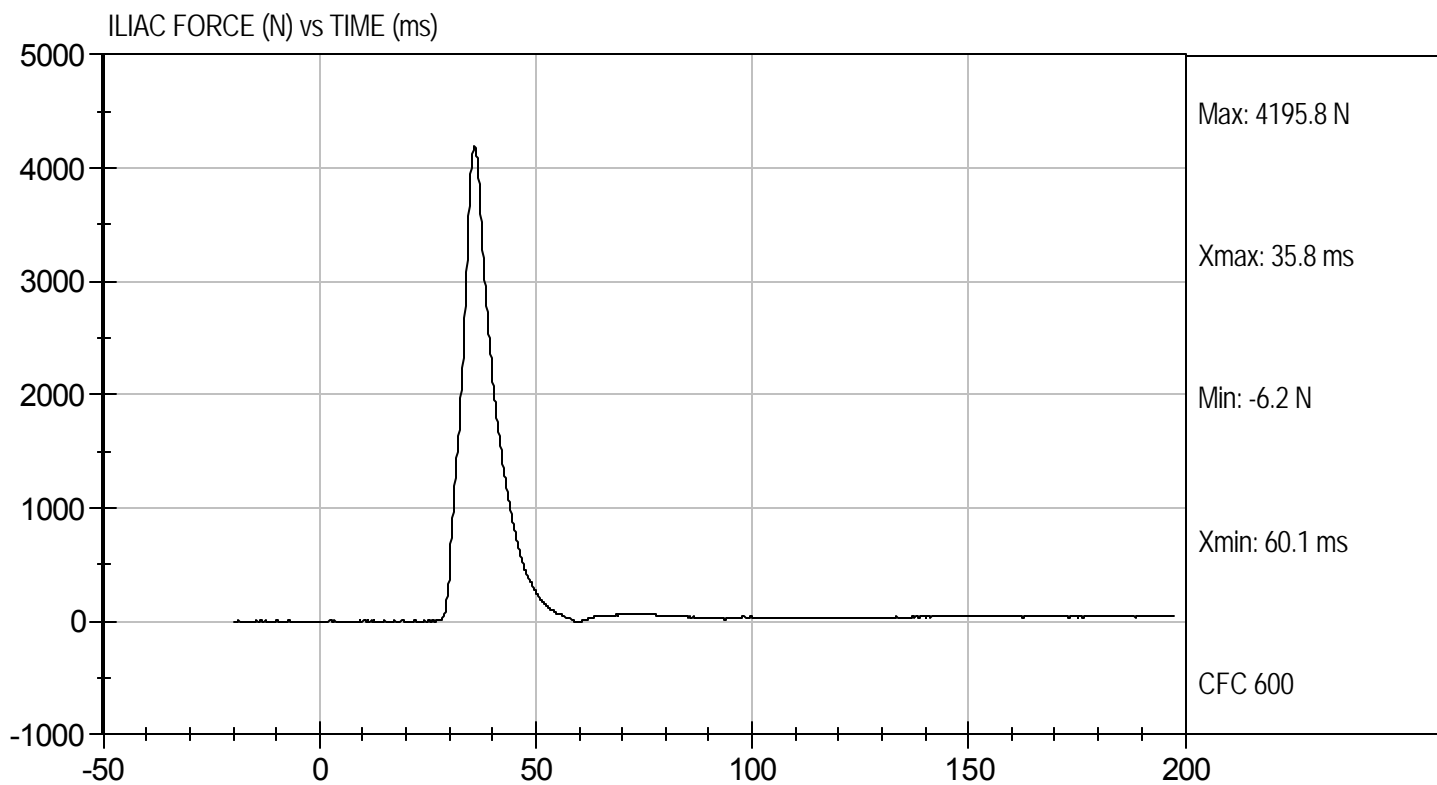
Test Date: 1/25/10  
Velocity: 14.01 ft/s, 4.27 m/s





Test Desc: Iliac Impact  
Component ID: D10108

Test Date: 1/25/10  
Velocity: 14.01 ft/s, 4.27 m/s



**MGA RESEARCH CORPORATION**  
**HEAD DROP TEST**  
**SID-Its BUILD LEVEL D DUMMY**

**ATD Serial No:** 262

**Test ID:** D10791

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	22.1	Pass
Laboratory Relative Humidity	%	10 to 70	24	Pass
Peak Resultant Acceleration	G's	115 to 137	132	Pass
Peak Lateral Acceleration	G's	+/- 15	-6.5	Pass
Unimodal	N/A	<15%	Yes	Pass
Overall Test Results				Pass

  
Laboratory Technician

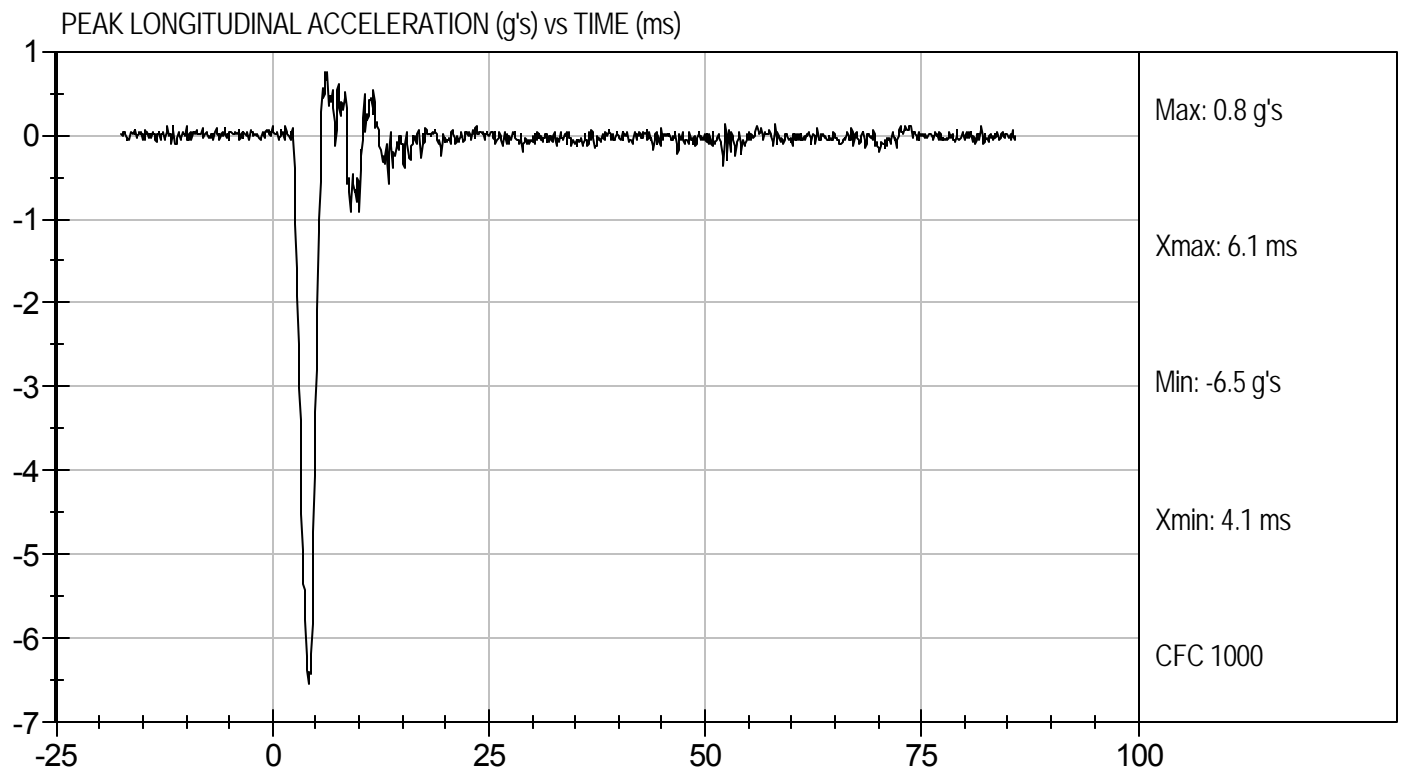
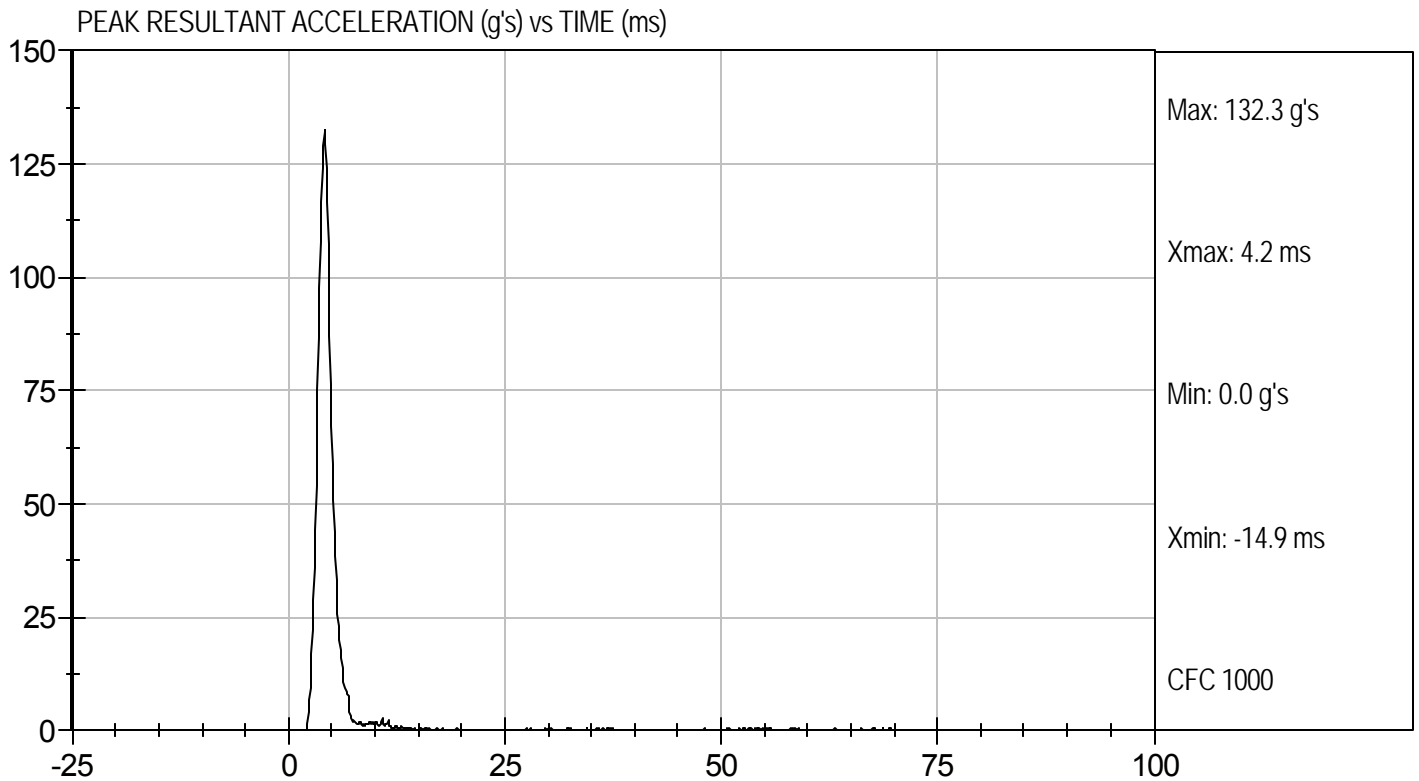
3/17/10  
Test Date

  
Approved By



Test Desc: Head Drop  
Component ID: D10791

Test Date: 3/17/10  
Velocity: 0 ft/s, 0 m/s



**MGA RESEARCH CORPORATION**  
**LATERAL NECK PENDULUM TEST**  
**SID-IIs BUILD LEVEL D DUMMY**


**ATD Serial No:** 262

**Test I.D:** D10792

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	20.8	Pass
Humidity		%	10 to 70	23	Pass
Impact Velocity		m/s	5.51 to 5.63	5.58	Pass
Delta Velocity	10 ms	m/s	2.20 to 2.80	2.52	Pass
	15 ms	m/s	3.30 to 4.10	3.59	Pass
	20 ms	m/s	4.40 to 5.40	4.80	Pass
	25 ms	m/s	5.40 to 6.10	5.53	Pass
	25-100 ms	m/s	5.50 to 6.20	5.54	Pass
Maximum D-Plane Rotation		deg	71 to 81	78	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	66	Pass
Maximum Occipital Condyle Moment during Rotation Interval Nm			-44 to -36	-36	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	122	Pass
Overall Test Results				Pass	

  
 Laboratory Technician

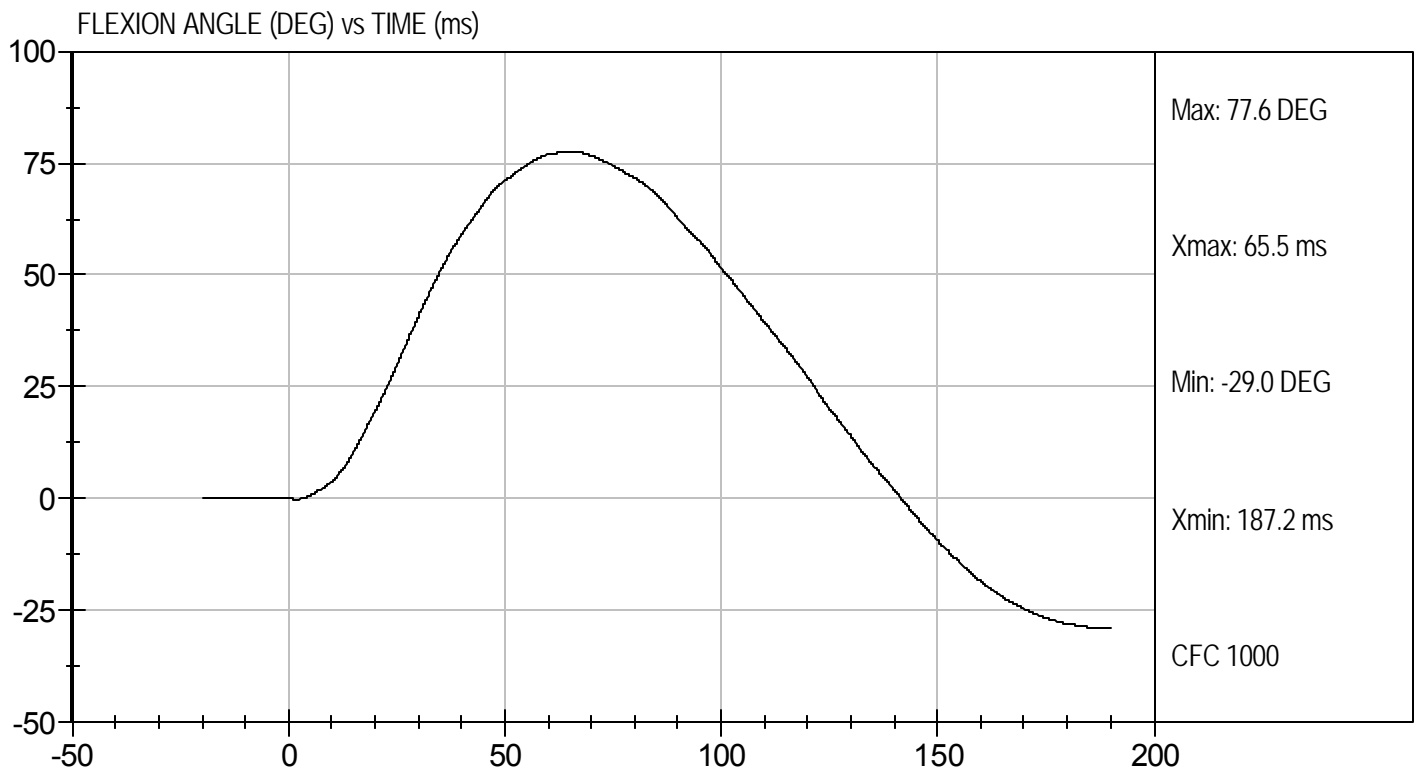
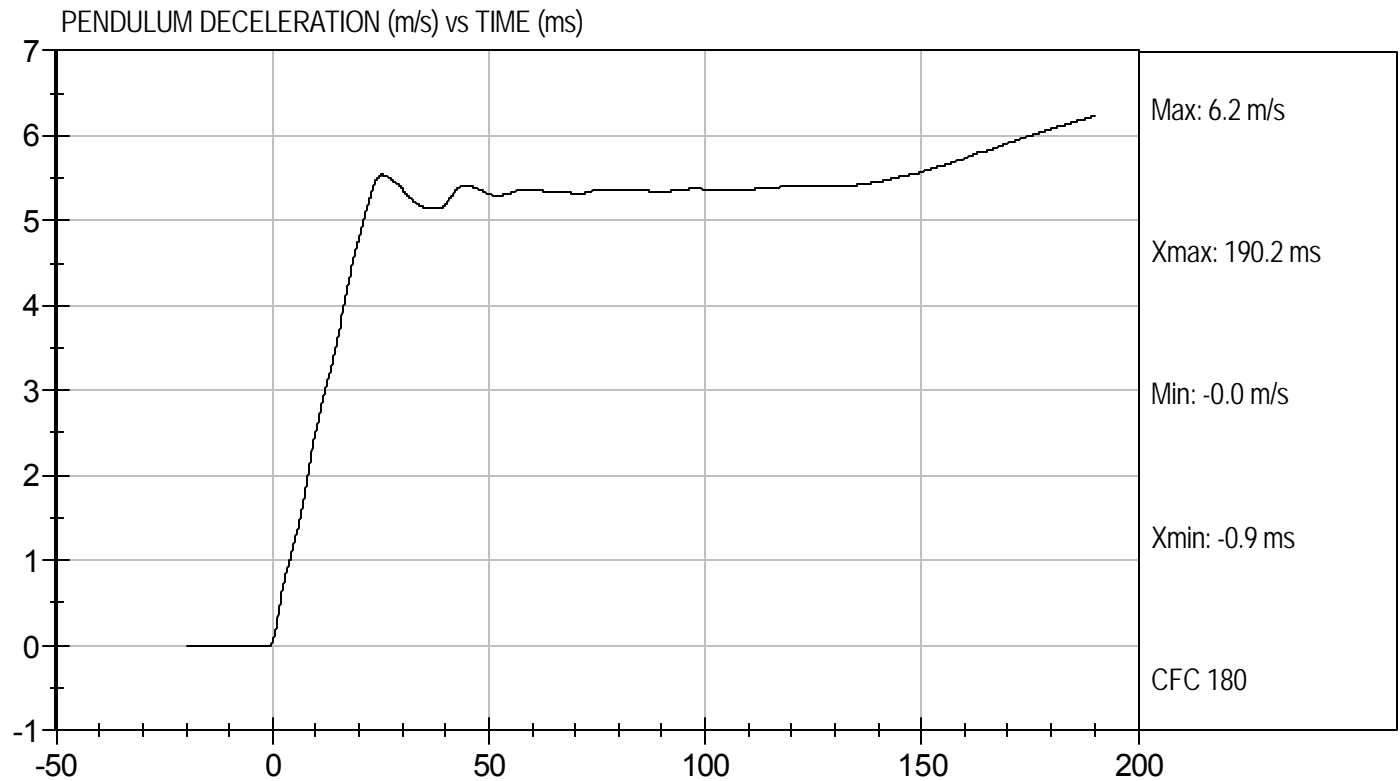
03/17/2010  
 Test Date

  
 Approved By



Test Desc: Neck Bending  
Component ID: D10792

Test Date: 03/17/2010  
Velocity: 18.32 ft/s, 5.58 m/s

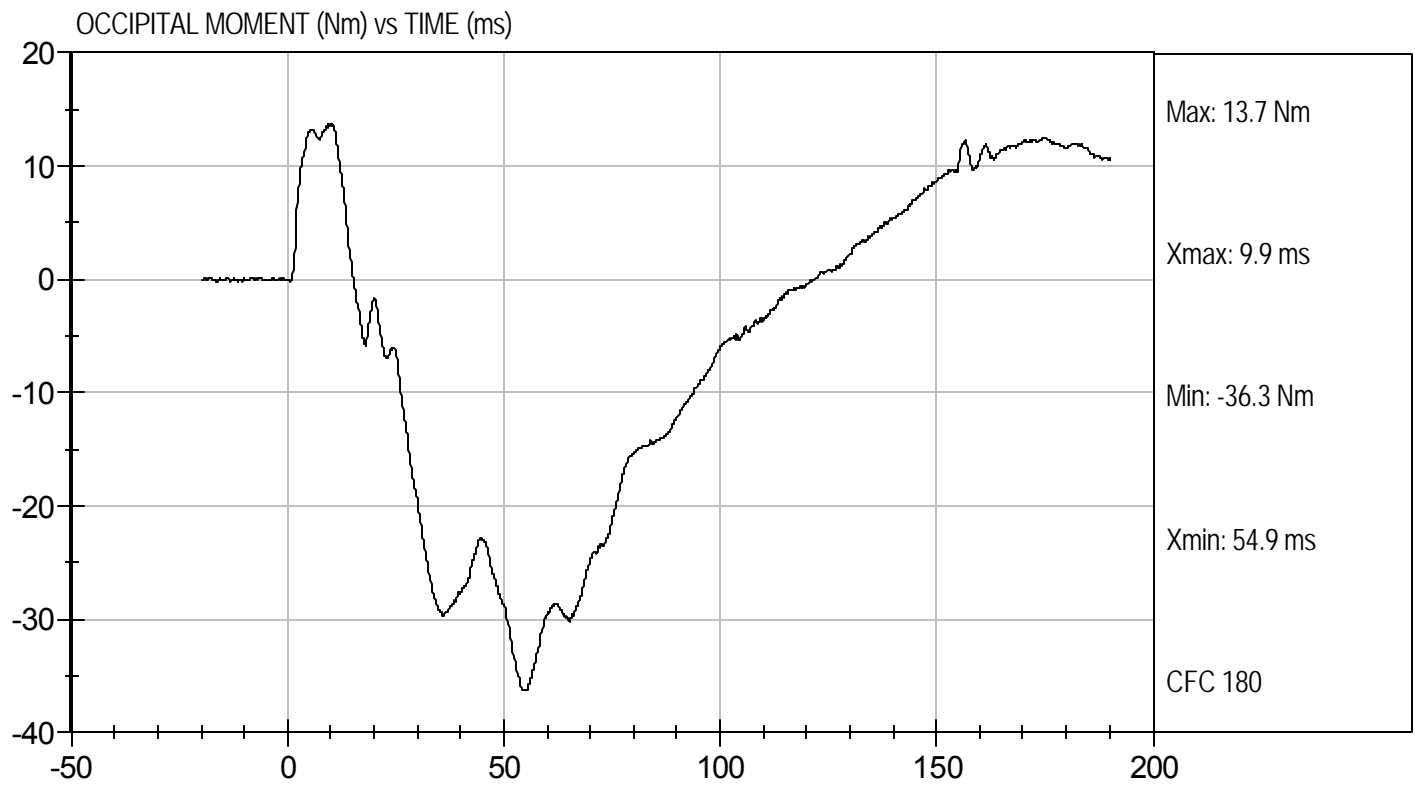






Test Desc: Neck Bending  
Component ID: D10792

Test Date: 03/17/2010  
Velocity: 18.32 ft/s, 5.58 m/s



**MGA RESEARCH CORPORATION**  
**SHOULDER IMPACT TEST**  
**SID-Its BUILD LEVEL D DUMMY**


**ATD Serial No:** 262

**Test ID:** D10793

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Maximum Probe Acceleration	G's	13 to 18	15	Pass
Shoulder Displacement	mm	28 to 37	34	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	18	Pass
Overall Test Results				Pass

  
Laboratory Technician

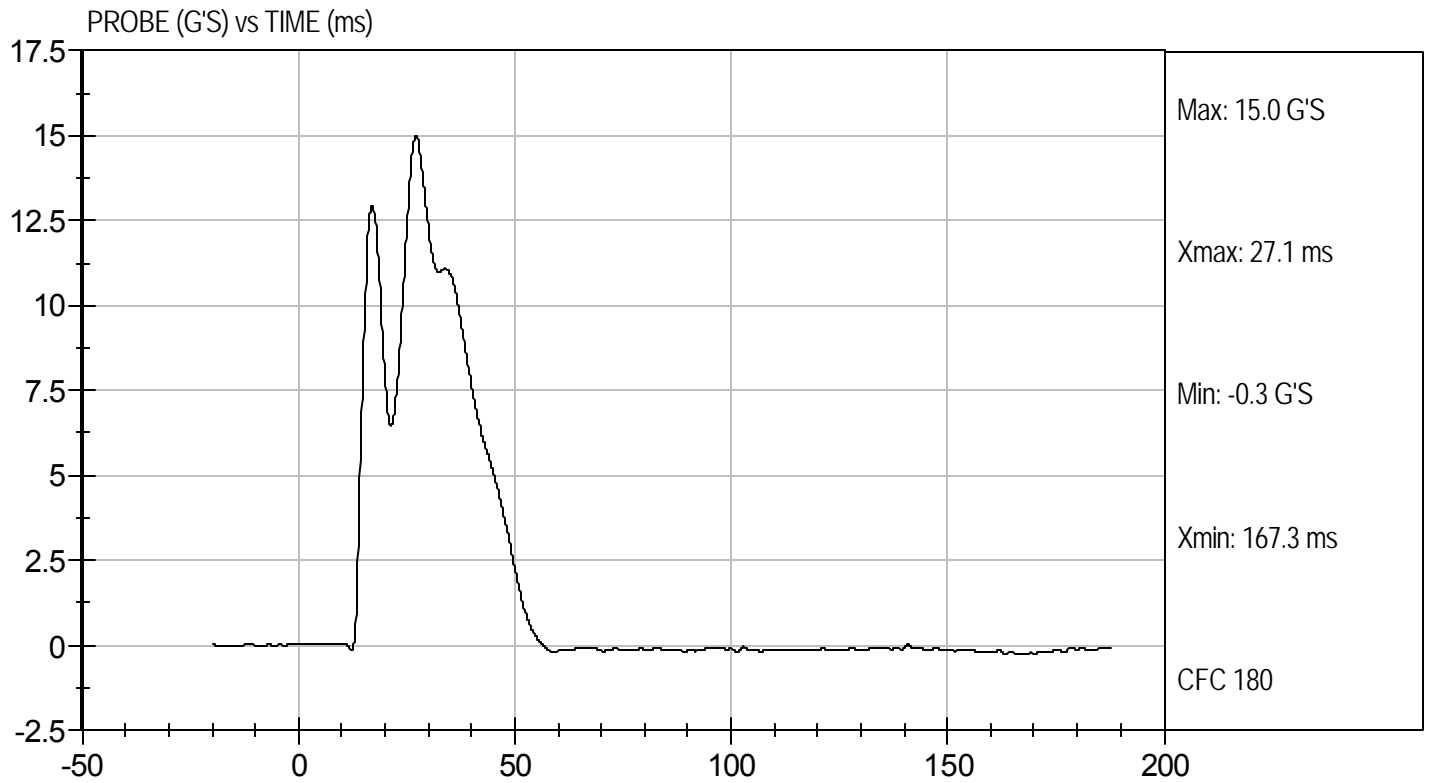
03/17/2010  
Test Date

  
Approved By



Test Desc: Shoulder Impact  
Component ID: D10793

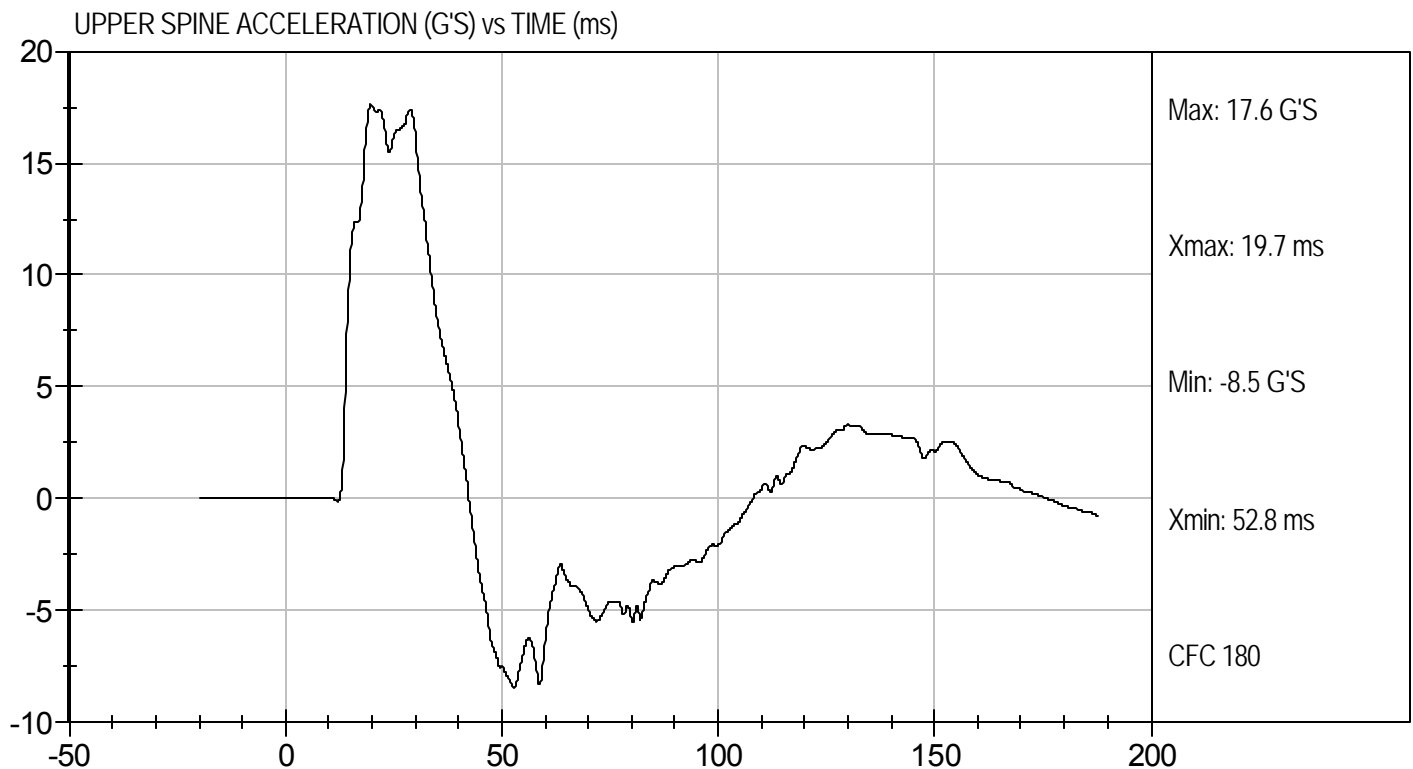
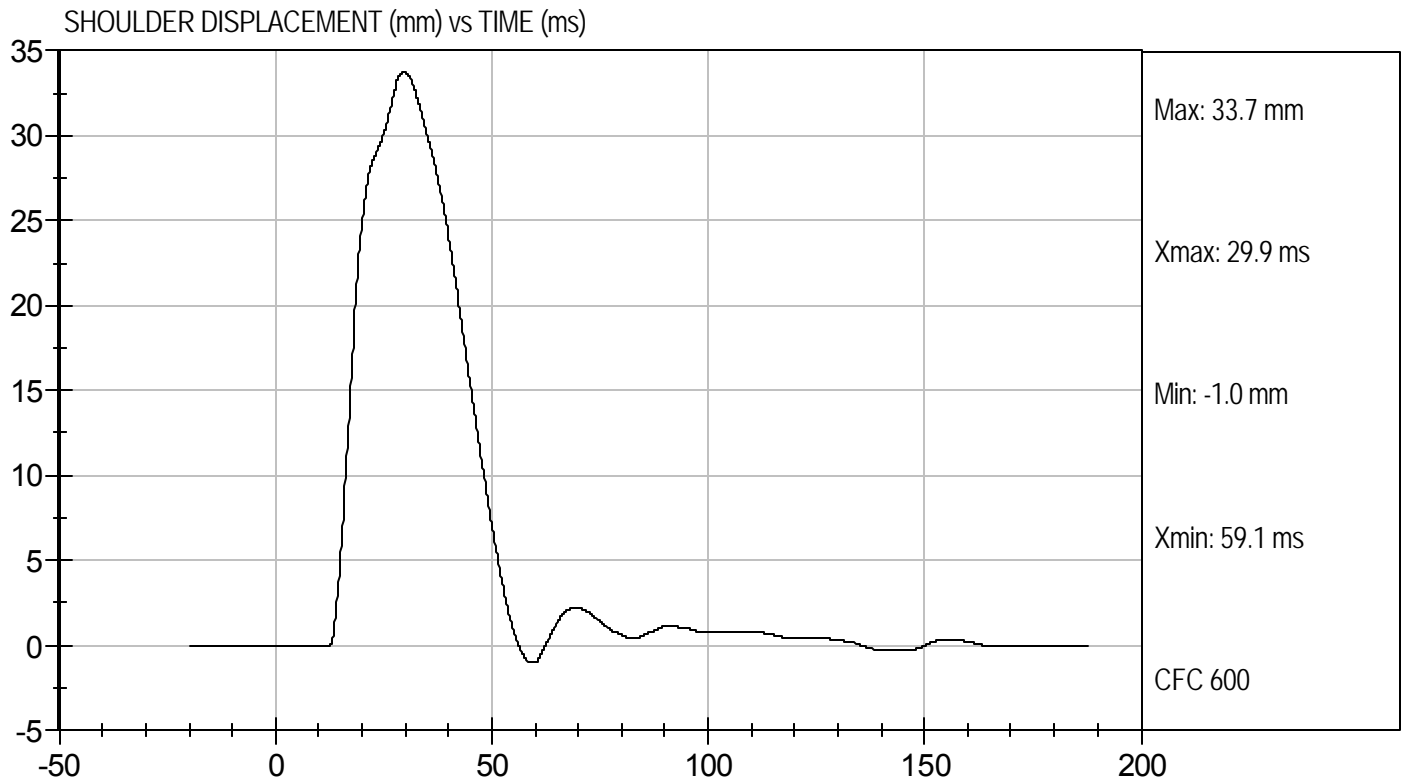
Test Date: 03/17/2010  
Velocity: 14.25 ft/s, 4.34 m/s





Test Desc: Shoulder Impact  
Component ID: D10793

Test Date: 03/17/2010  
Velocity: 14.25 ft/s, 4.34 m/s



**MGA RESEARCH CORPORATION**  
**THORAX (WITH ARM) IMPACT TEST**  
**SID-IIs BUILD LEVEL D DUMMY**


**ATD Serial No:** 262

**Test I.D:** D10794

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Peak Impactor Acceleration	G's	30 to 36	32	Pass
Shoulder Displacement	mm	31 to 40	37	Pass
Upper Rib Displacement	mm	25 to 32	28	Pass
Middle Rib Displacement	mm	30 to 36	31	Pass
Lower Rib Displacement	mm	32 to 38	33	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	38	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	31	Pass
Overall Test Results			Pass	

  
 Laboratory Technician

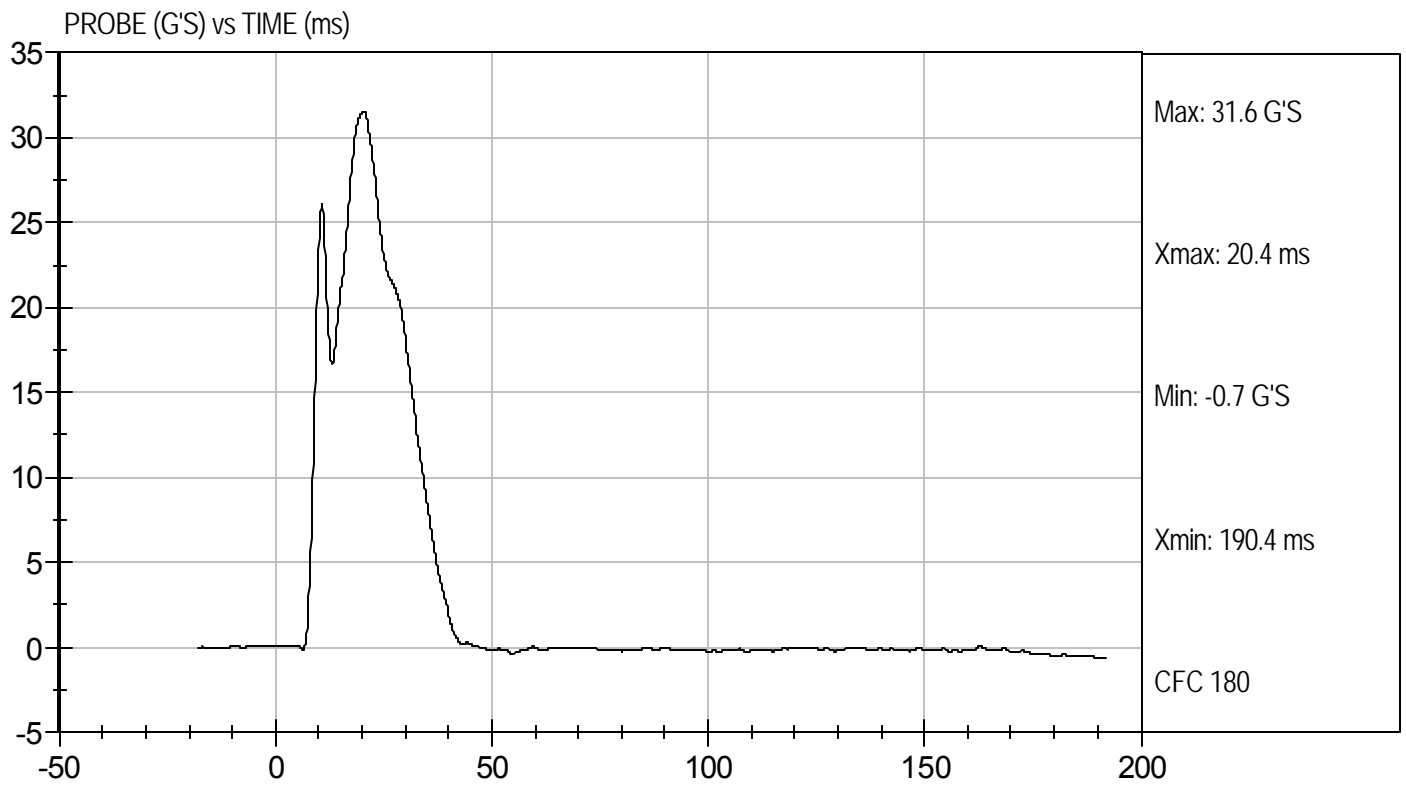
03/17/2010  
 Test Date

  
 Approved By



Test Desc: Thorax With Arm  
Component ID: D10794

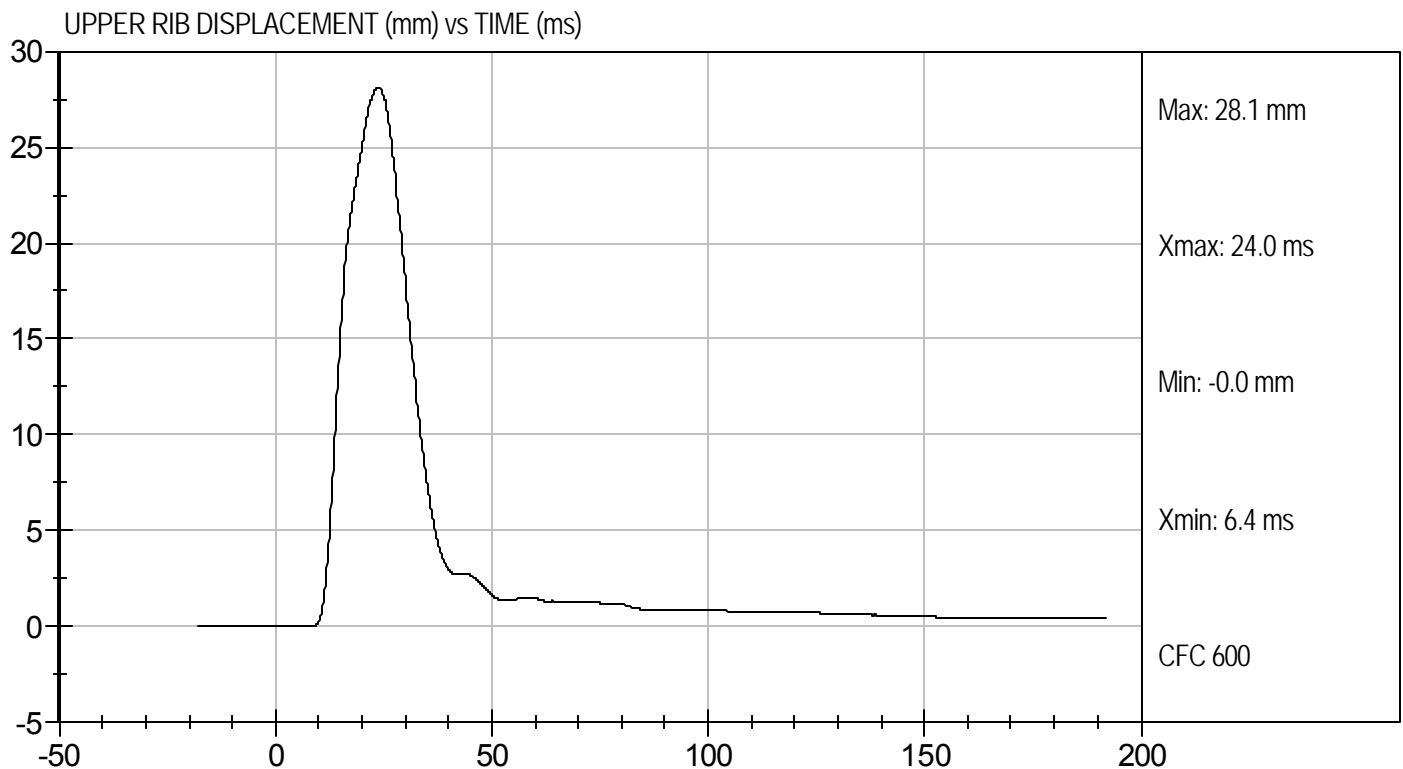
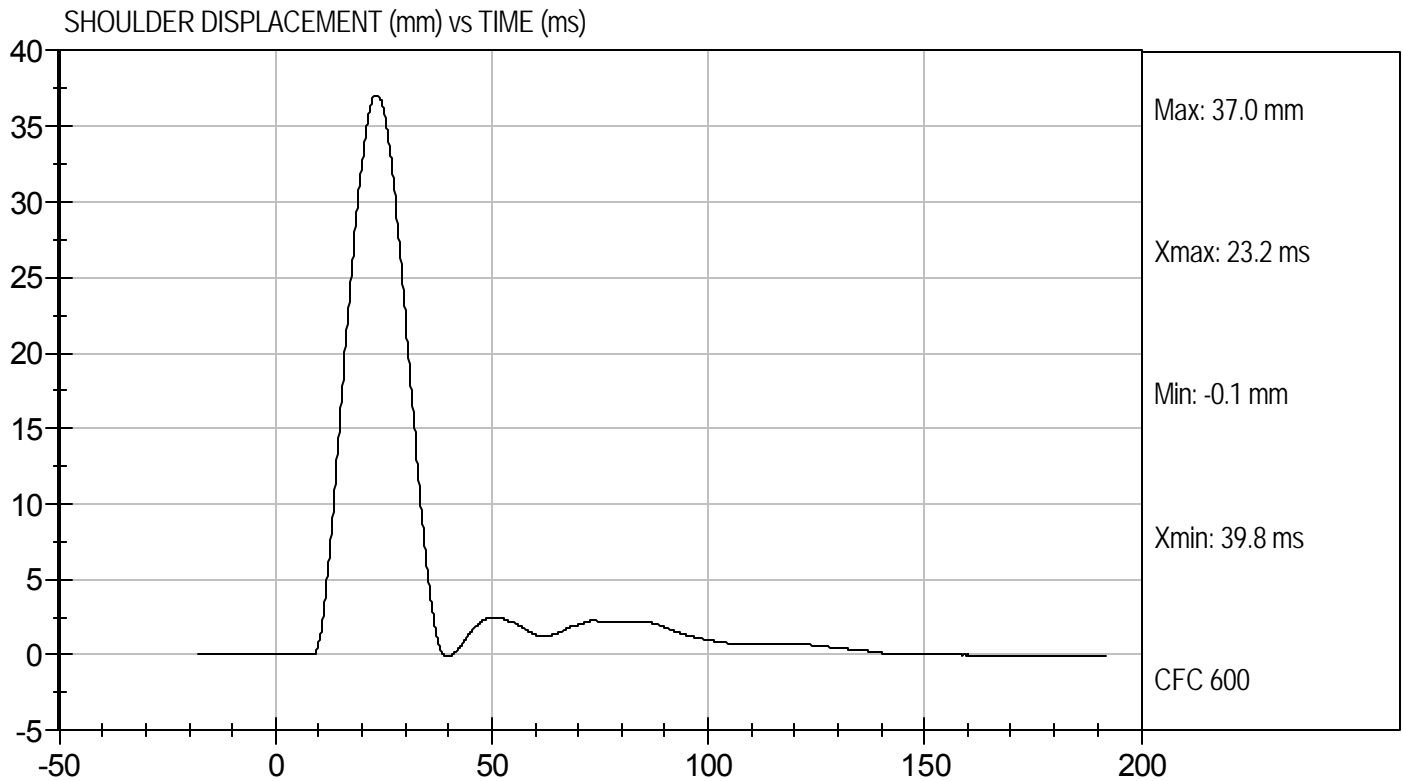
Test Date: 03/17/2010  
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Thorax With Arm  
Component ID: D10794

Test Date: 03/17/2010  
Velocity: 22.22 ft/s, 6.77 m/s

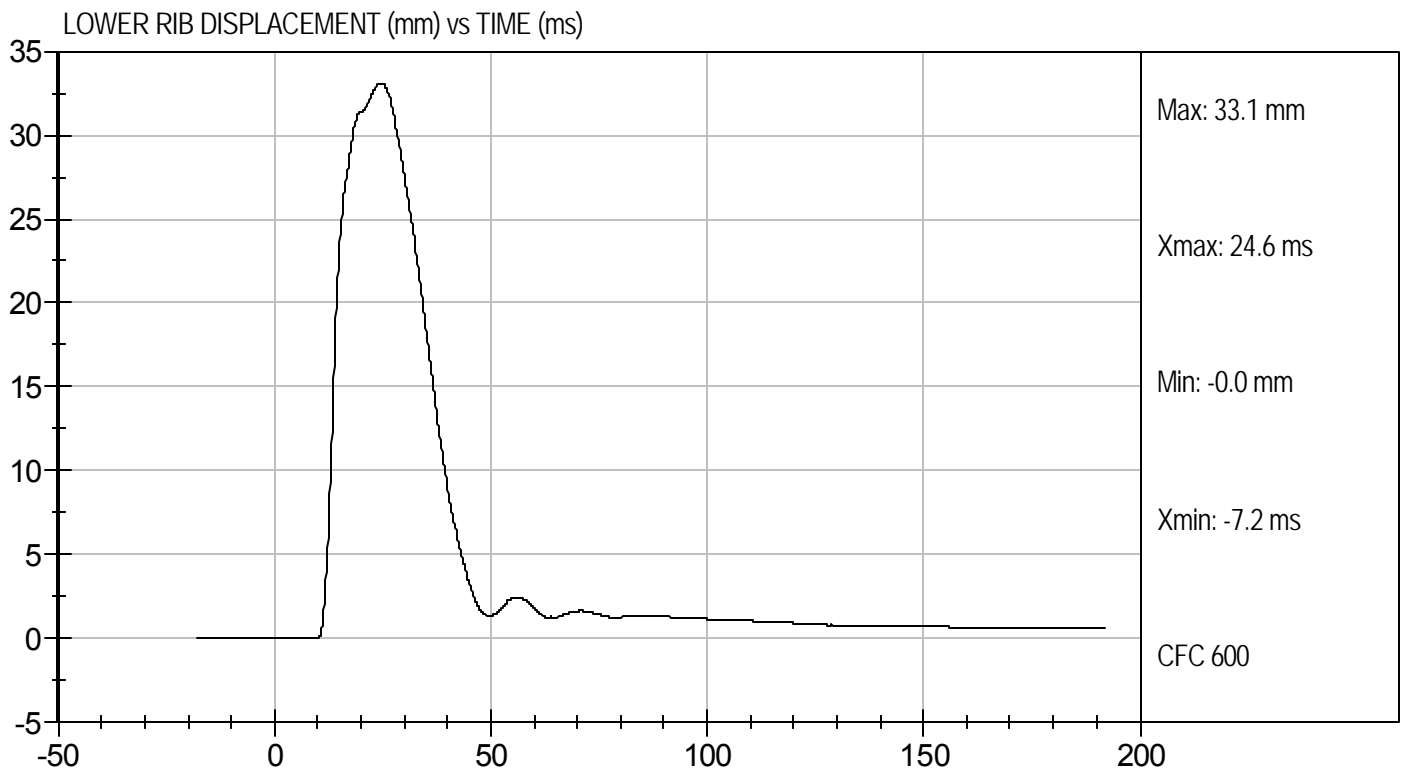
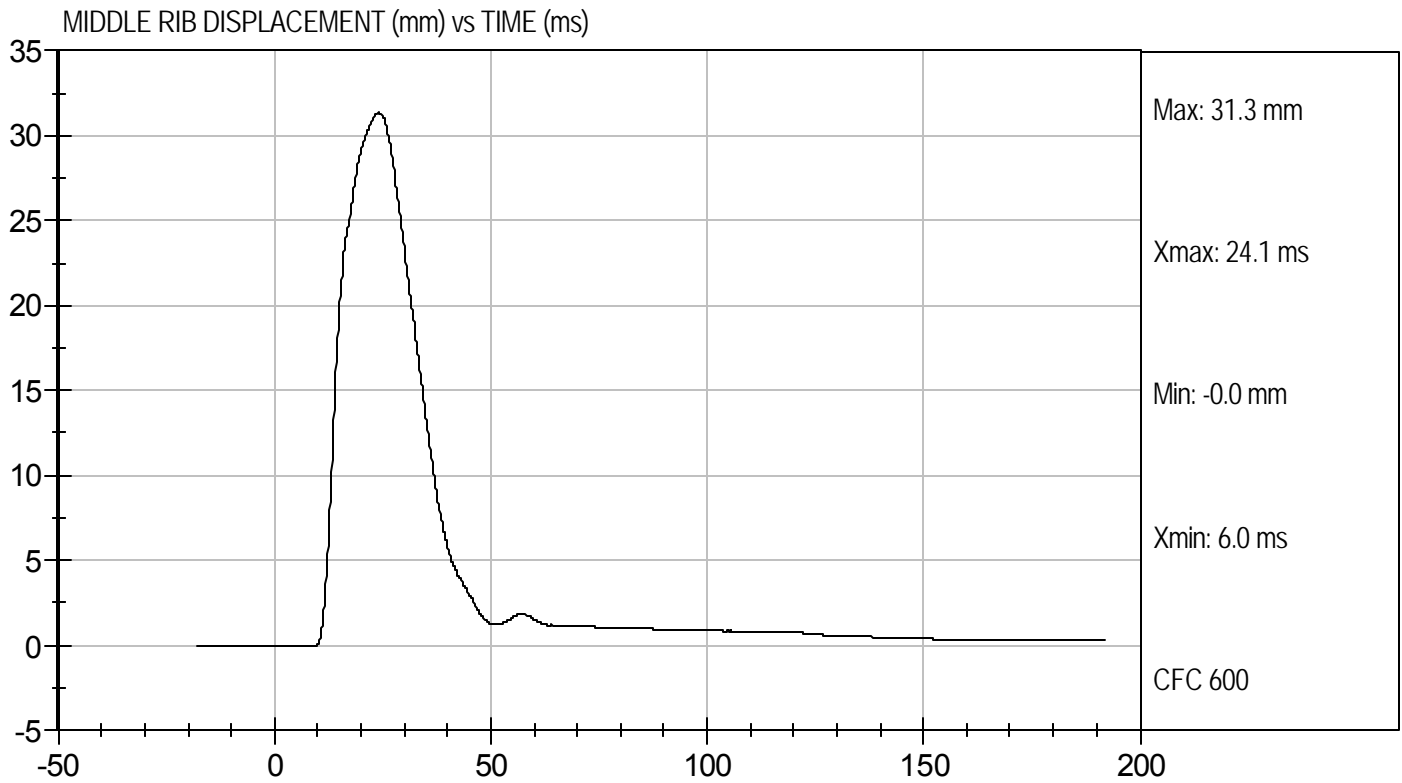






Test Desc: Thorax With Arm  
Component ID: D10794

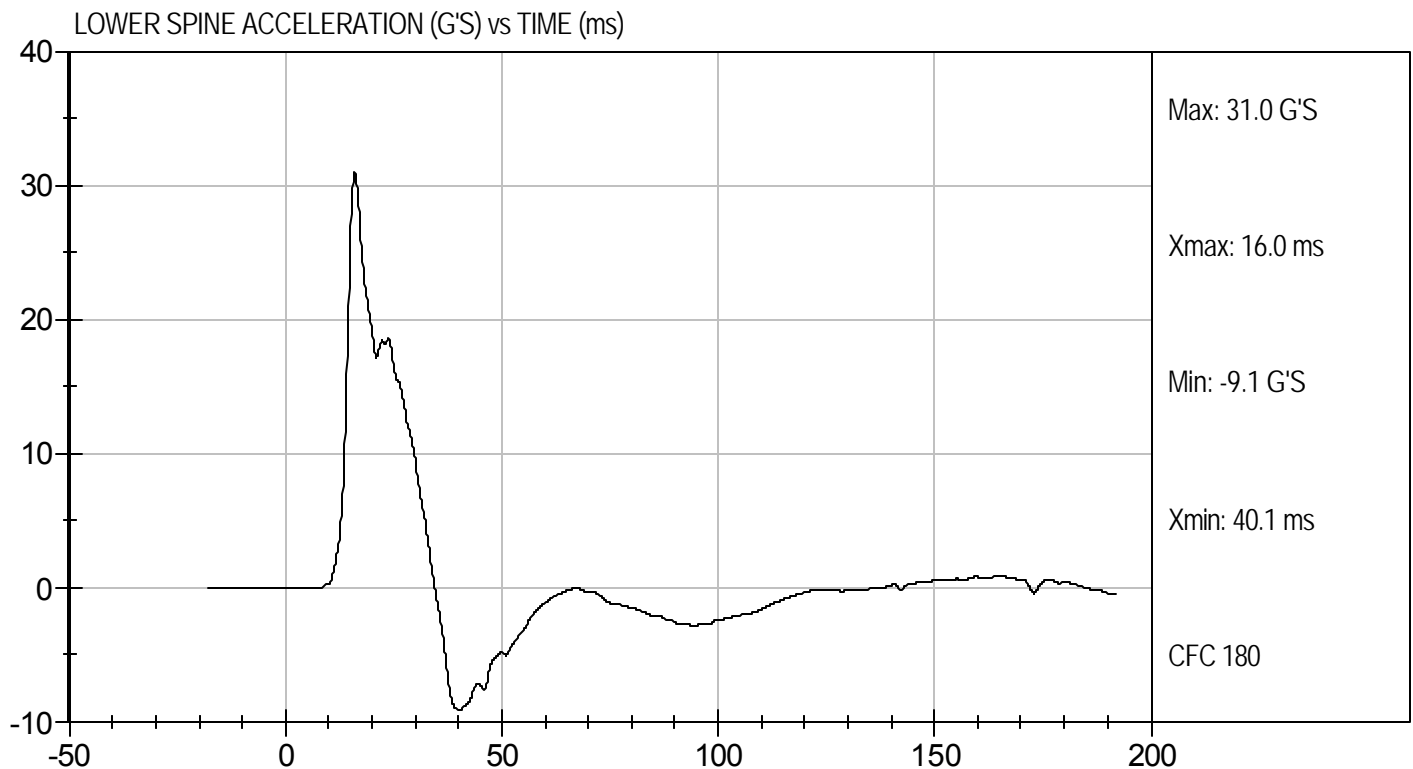
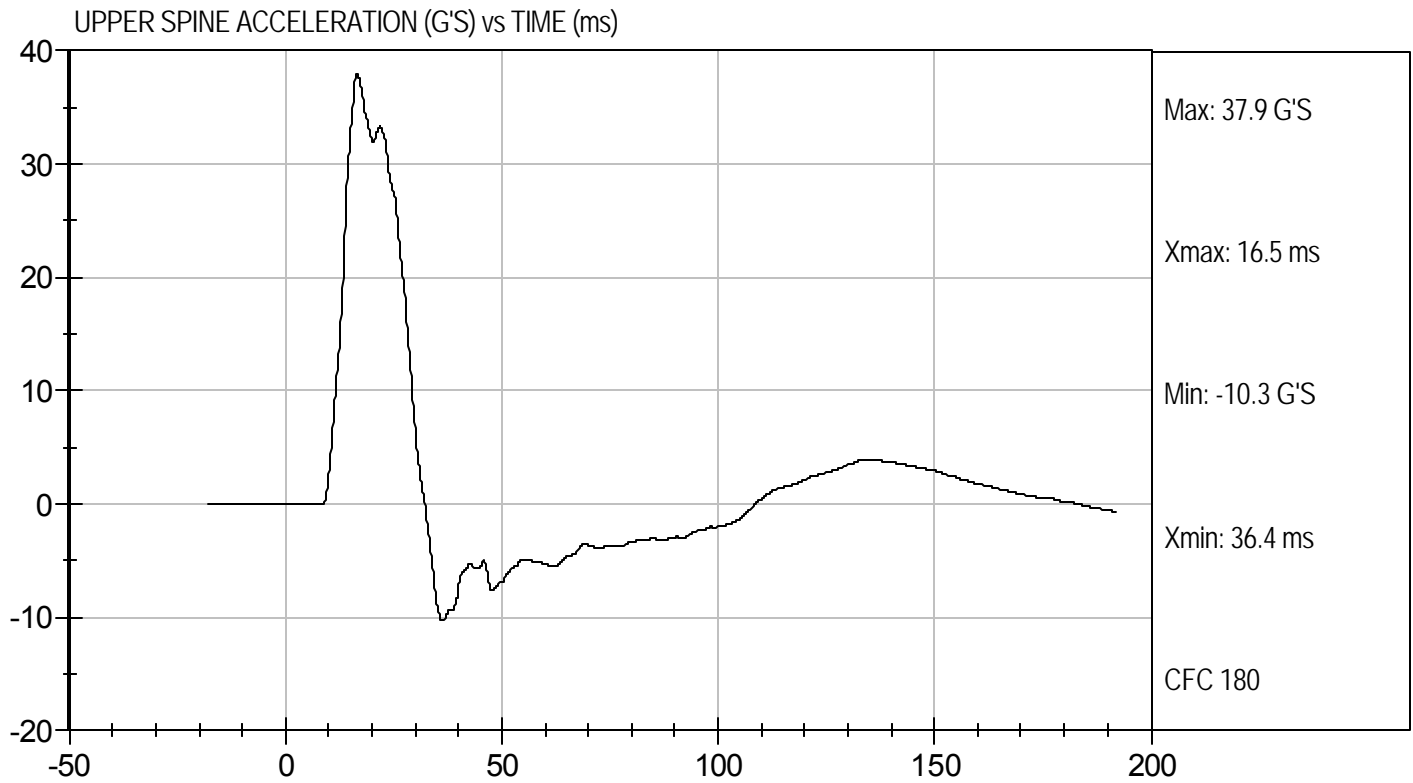
Test Date: 03/17/2010  
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Thorax With Arm  
Component ID: D10794

Test Date: 03/17/2010  
Velocity: 22.22 ft/s, 6.77 m/s



**MGA RESEARCH CORPORATION**  
**THORAX (WITHOUT ARM) IMPACT TEST**  
**SID-IIs BUILD LEVEL D DUMMY**

**ATD Serial No:** 262

**Test I.D:** D10795

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Humidity	%	10 to 70	24	Pass
Impact Velocity	m/s	4.20 to 4.40	4.27	Pass
Peak Impactor Force	G's	14 to 18	15	Pass
Upper Rib Displacement	mm	32 to 40	35	Pass
Middle Rib Displacement	mm	39 to 45	41	Pass
Lower Rib Displacement	mm	35 to 43	37	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	15	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	9	Pass
Overall Test Results				Pass

  
Laboratory Technician

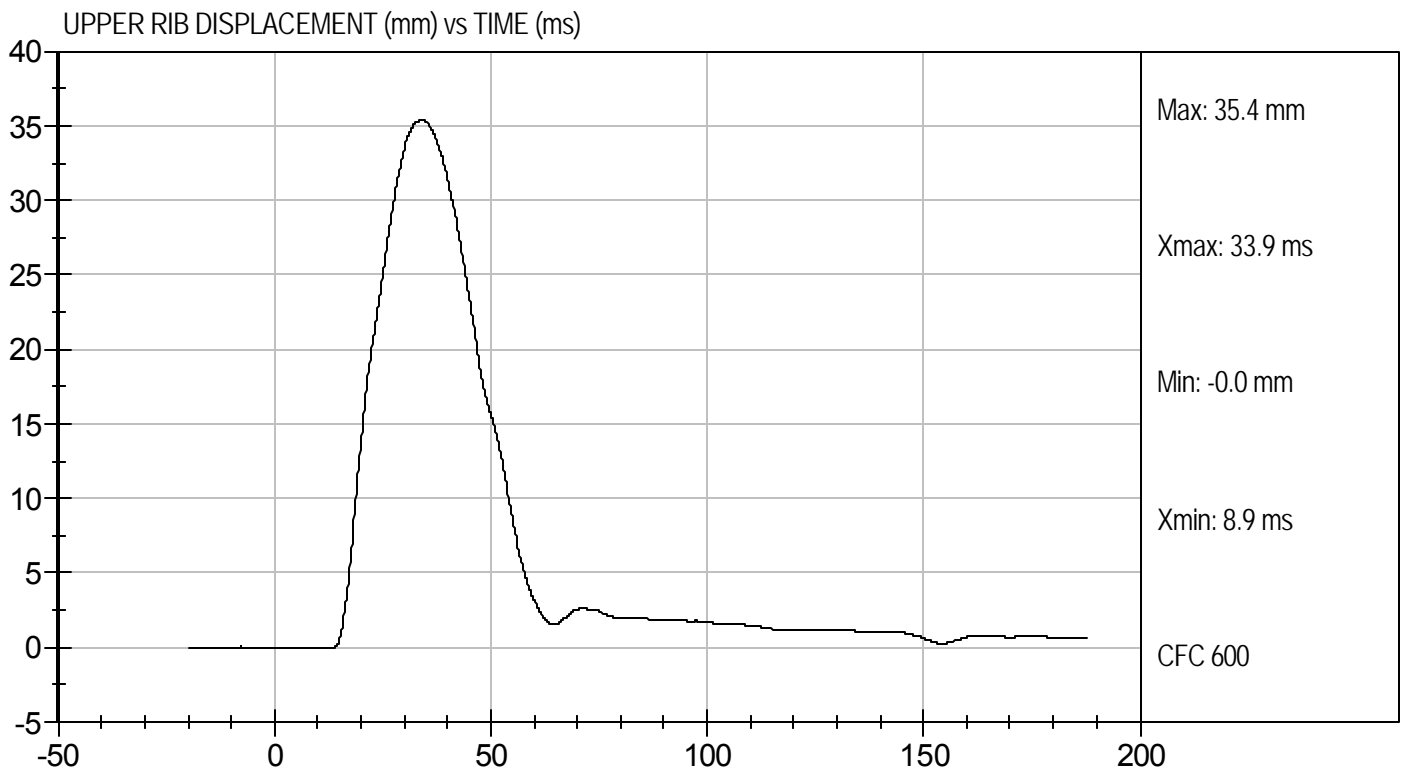
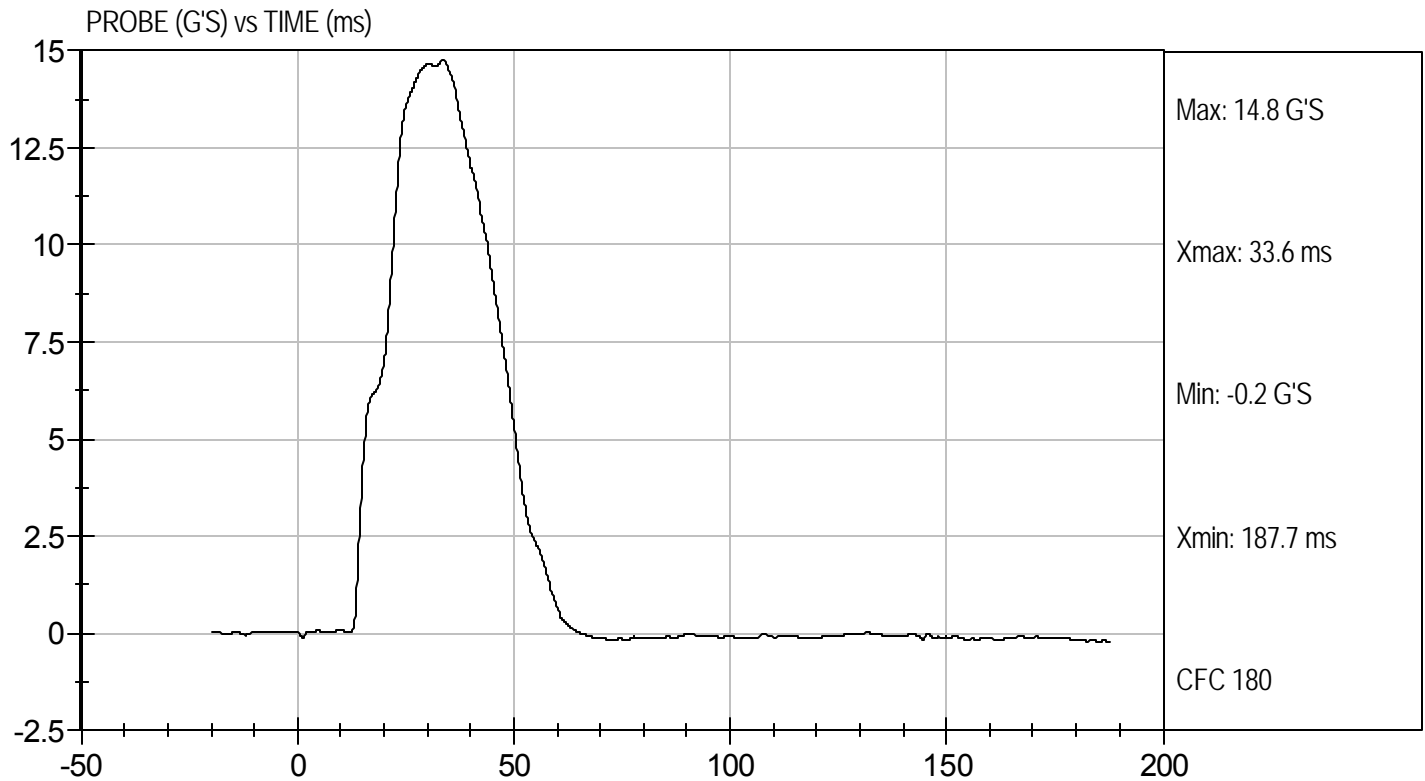
03/17/2010  
Test Date

  
Approved By



Test Desc: Thorax Without Arm  
Component ID: D10795

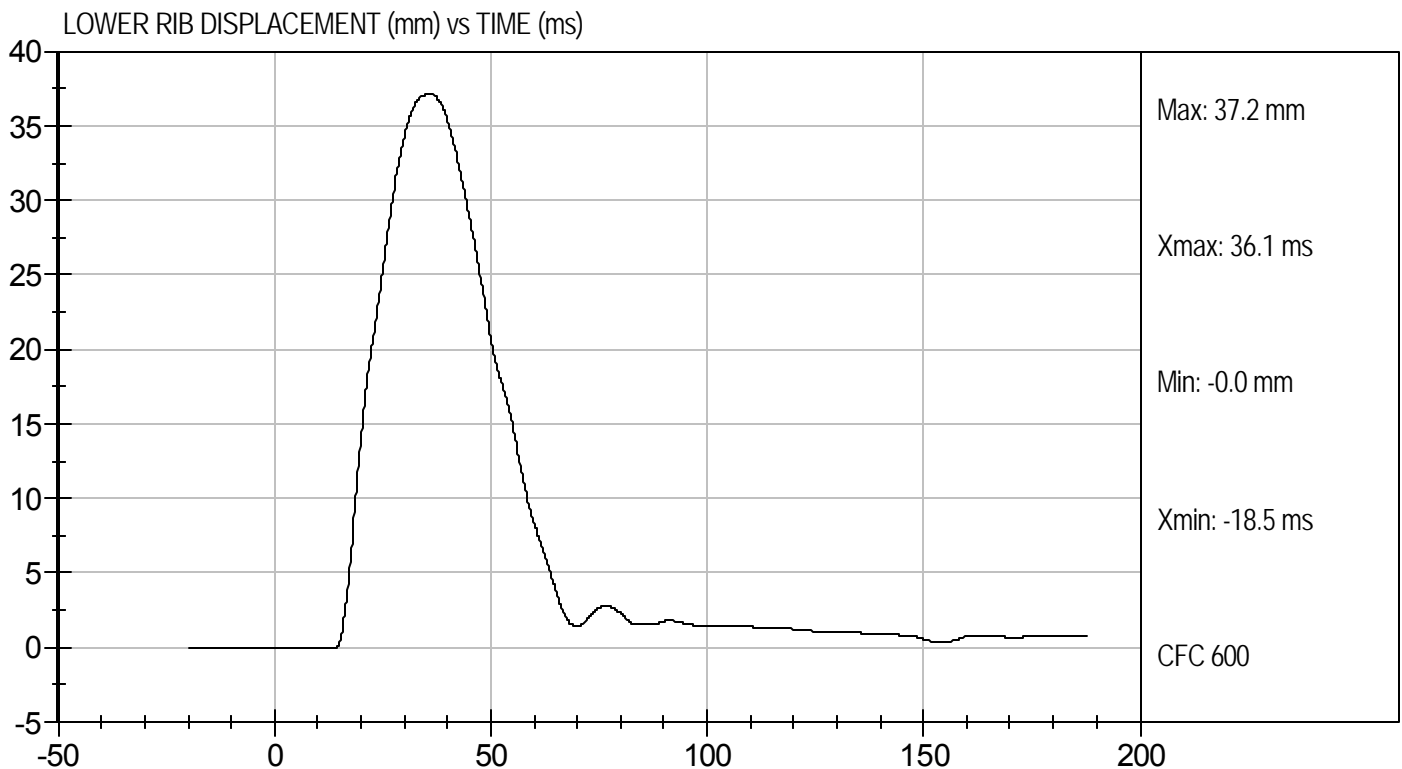
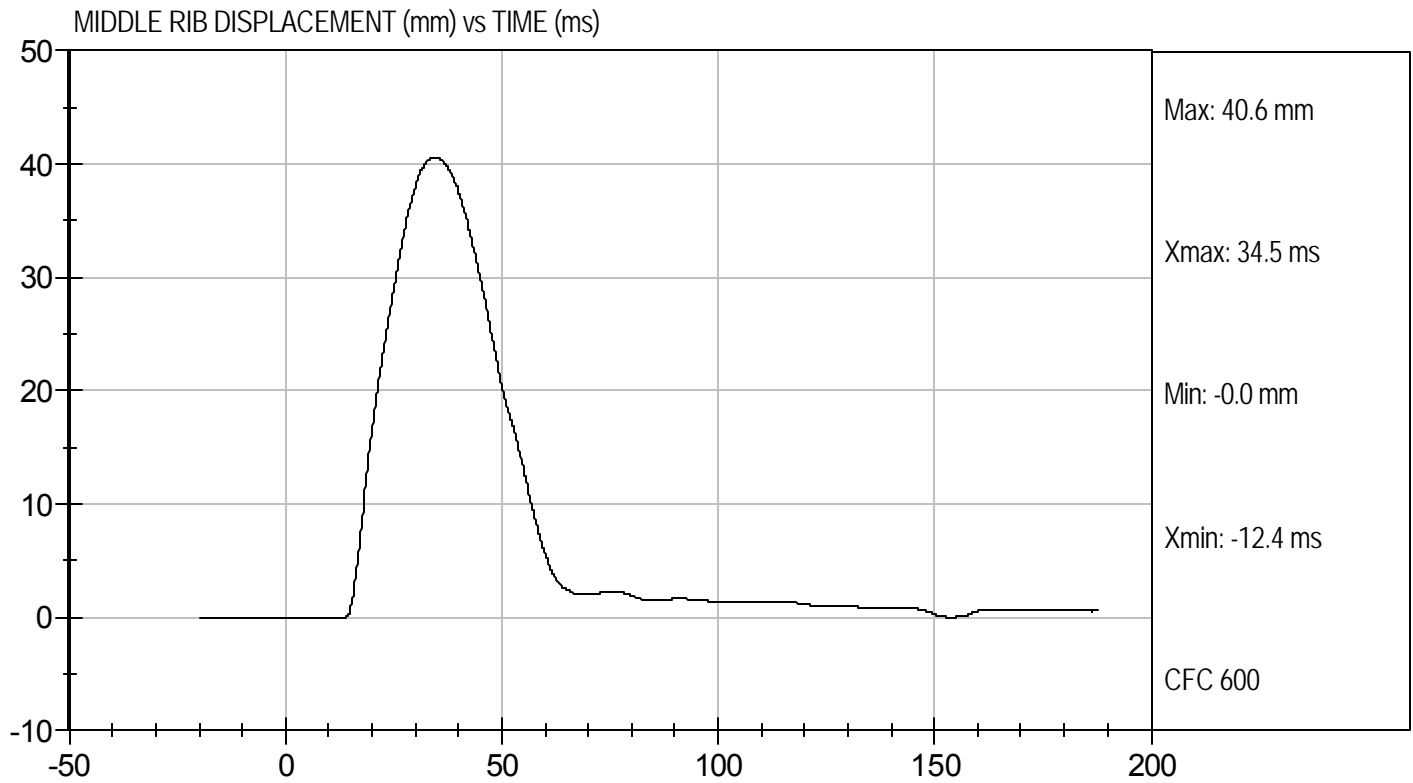
Test Date: 03/17/2010  
Velocity: 14.01 ft/s, 4.27 m/s





Test Desc: Thorax Without Arm  
Component ID: D10795

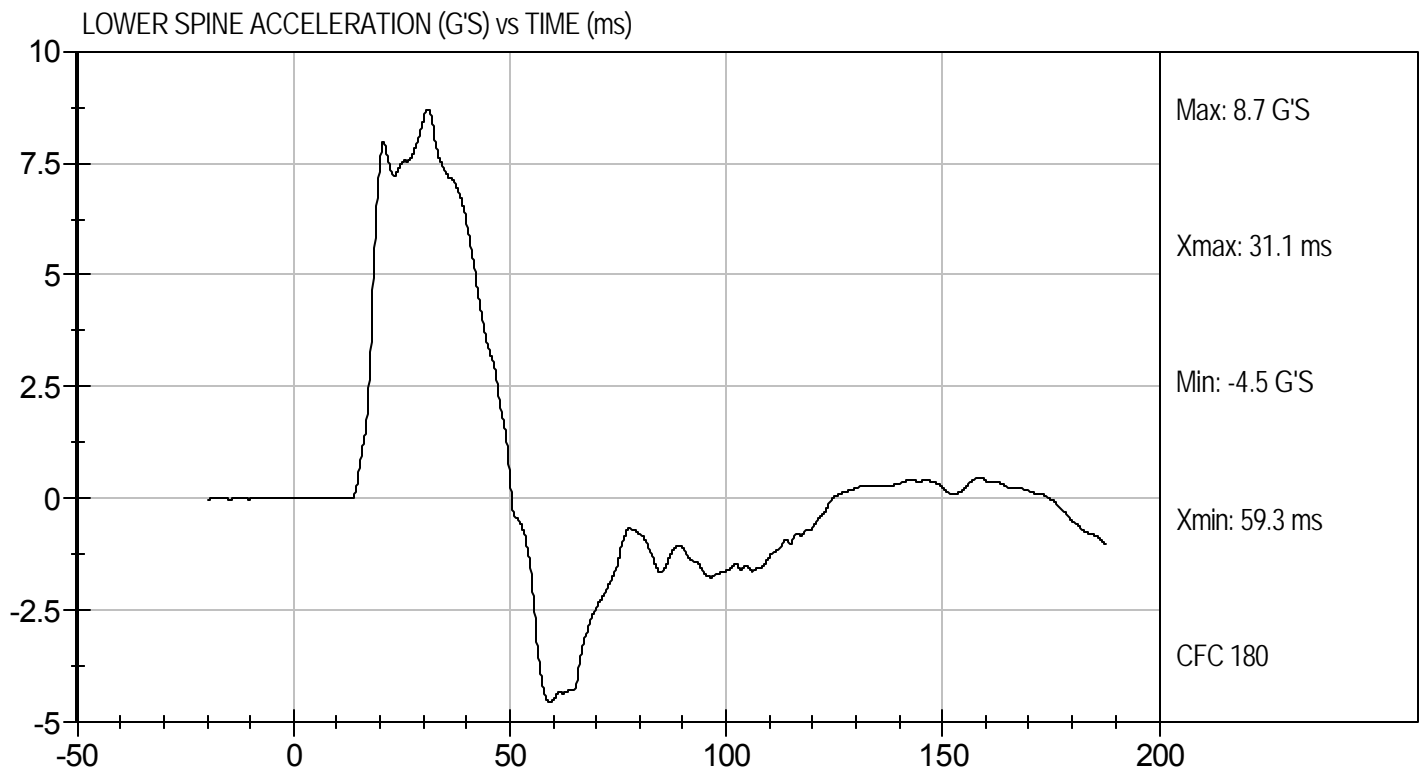
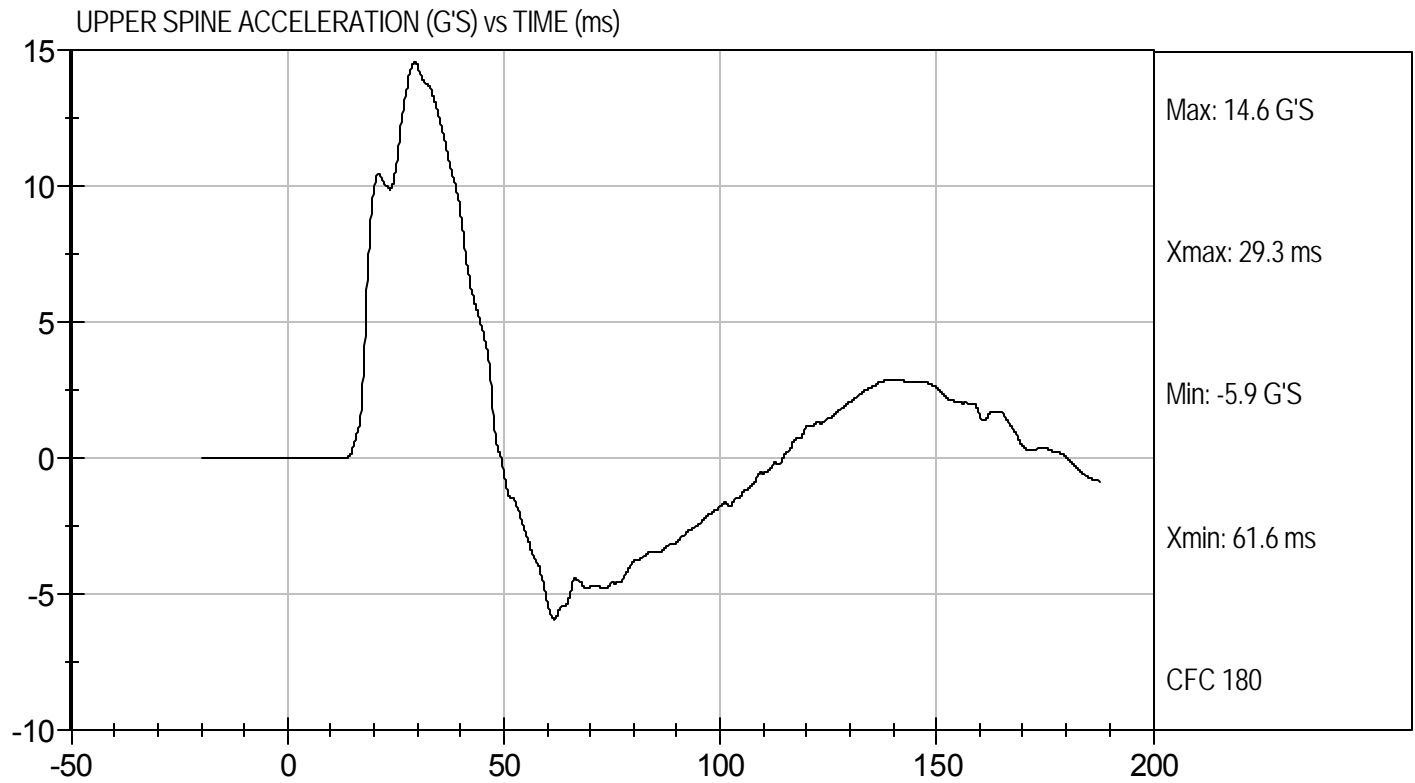
Test Date: 03/17/2010  
Velocity: 14.01 ft/s, 4.27 m/s





Test Desc: Thorax Without Arm  
Component ID: D10795

Test Date: 03/17/2010  
Velocity: 14.01 ft/s, 4.27 m/s



**MGA RESEARCH CORPORATION**  
**ABDOMINAL IMPACT TEST**  
**SID-IIs BUILD LEVEL D DUMMY**


**ATD Serial No:** 262

**Test I.D:** D10796

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	23	Pass
Impact Velocity	m/s	4.20 to 4.40	4.23	Pass
Peak Impactor Acceleration	G's	12 to 16	13	Pass
Upper Rib Displacement	mm	36 to 47	40	Pass
Lower Rib Displacement	mm	33 to 44	37	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	10	Pass
Overall Test Results				Pass

  
Laboratory Technician

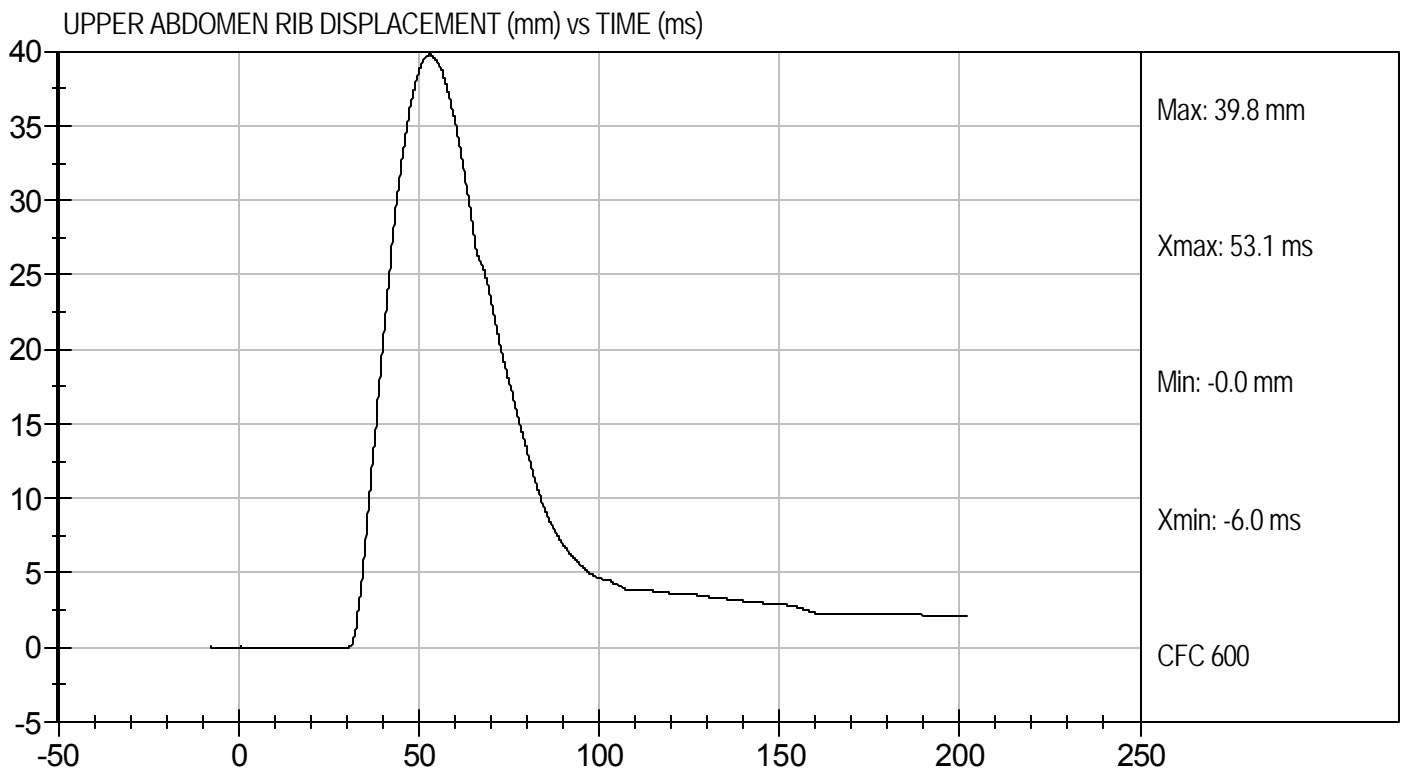
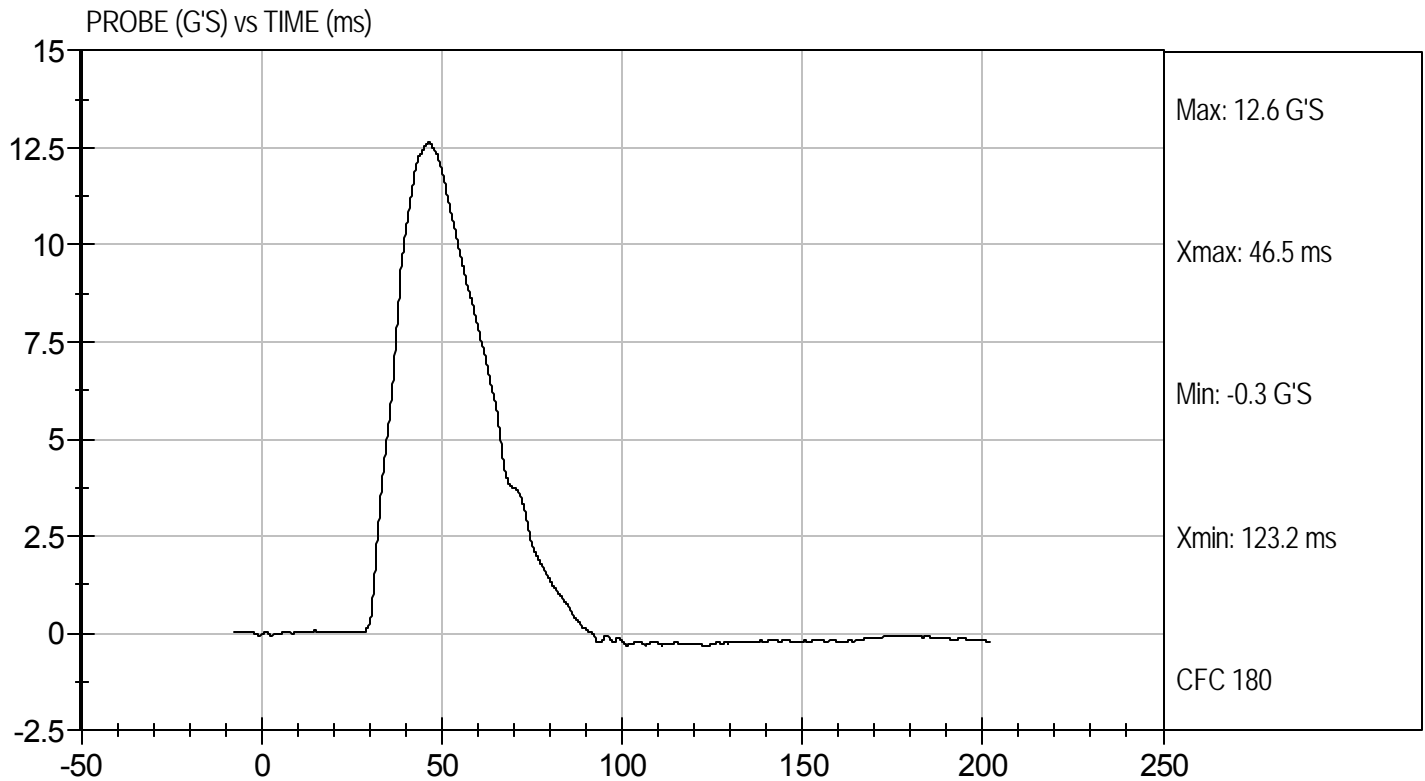
03/17/2010  
Test Date

  
Approved By



Test Desc: Abdomen Impact  
Component ID: D10796

Test Date: 03/17/2010  
Velocity: 13.89 ft/s, 4.23 m/s



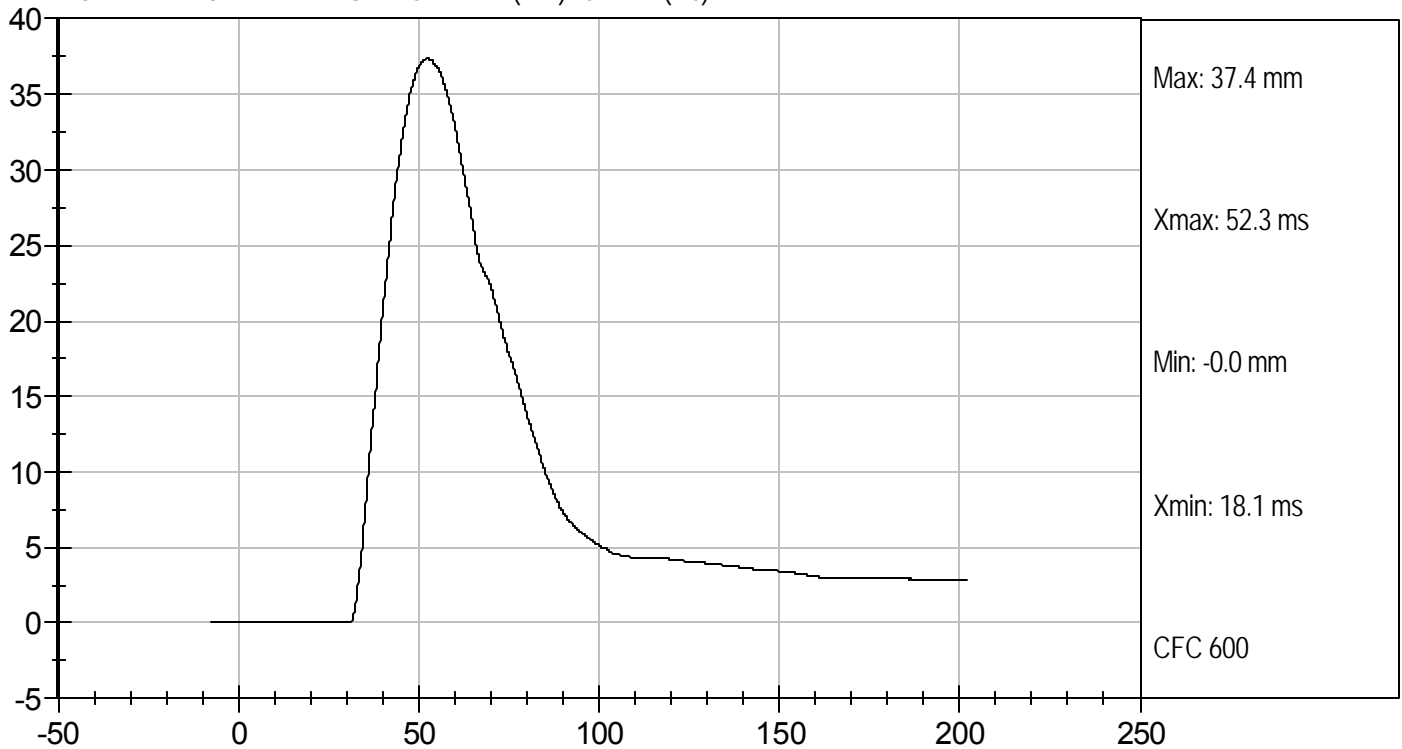




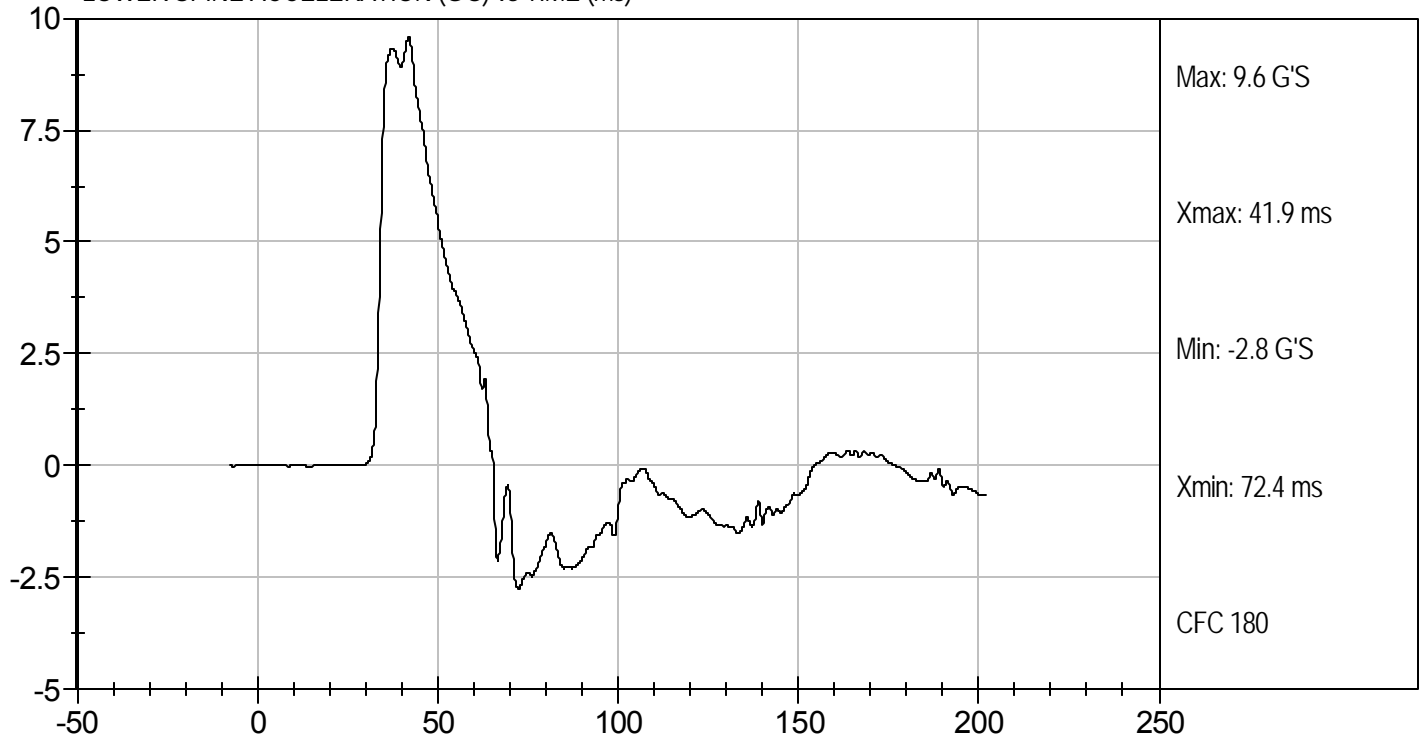
Test Desc: Abdomen Impact  
Component ID: D10796

Test Date: 03/17/2010  
Velocity: 13.89 ft/s, 4.23 m/s

LOWER ABDOMEN RIB DISPLACEMENT (mm) vs TIME (ms)



LOWER SPINE ACCELERATION (G'S) vs TIME (ms)



**MGA RESEARCH CORPORATION**  
**PELVIS IMPACT TEST**  
**SID-IIs BUILD LEVEL D DUMMY**

**ATD Serial No:** 262

**Test I.D:** D10797

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.0	Pass
Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Peak Impactor Acceleration	G's	38 to 47	43	Pass
Pelvis Y Acceleration after 6 ms	G's	34 to 42	41	Pass
Peak Acetabulum Force	N	3600 to 4300	4059	Pass
Overall Test Results			Pass	

  
Laboratory Technician

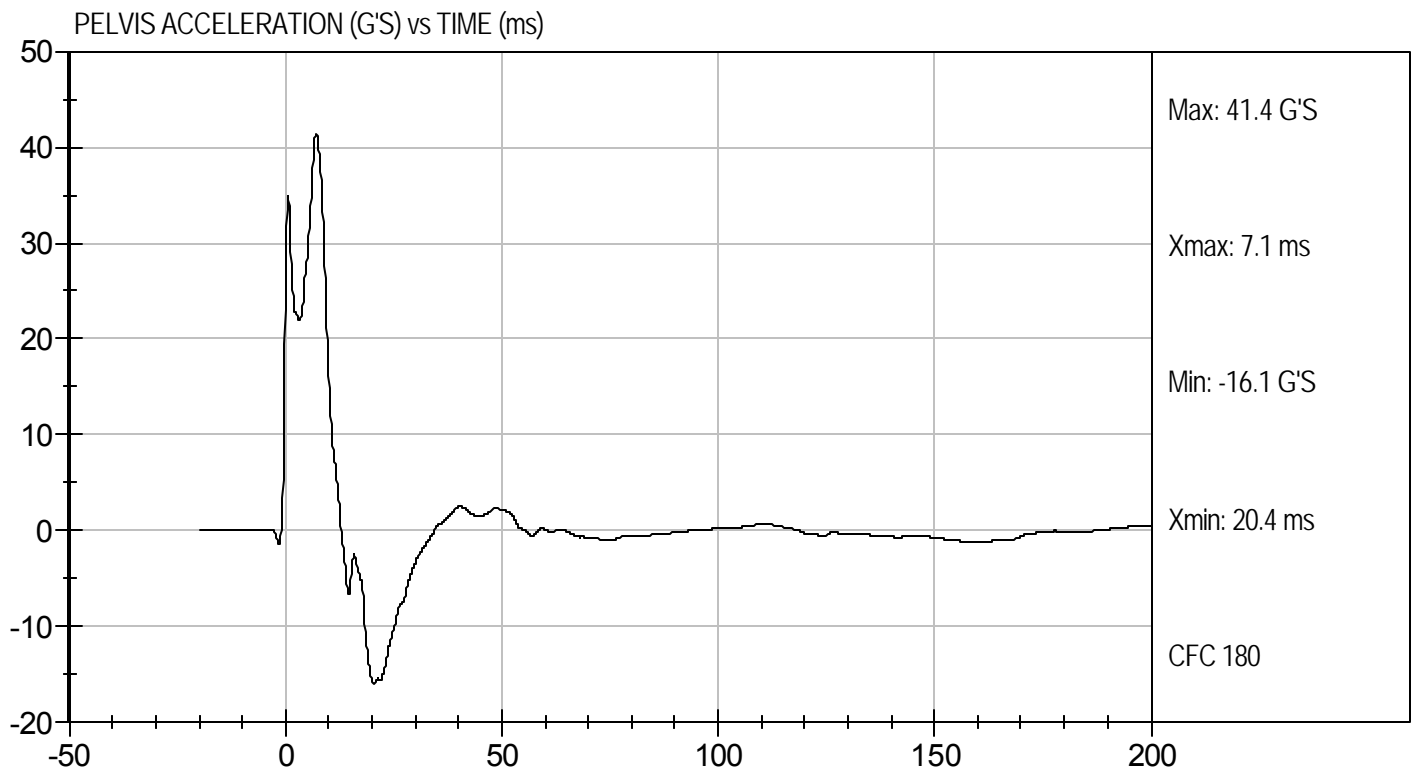
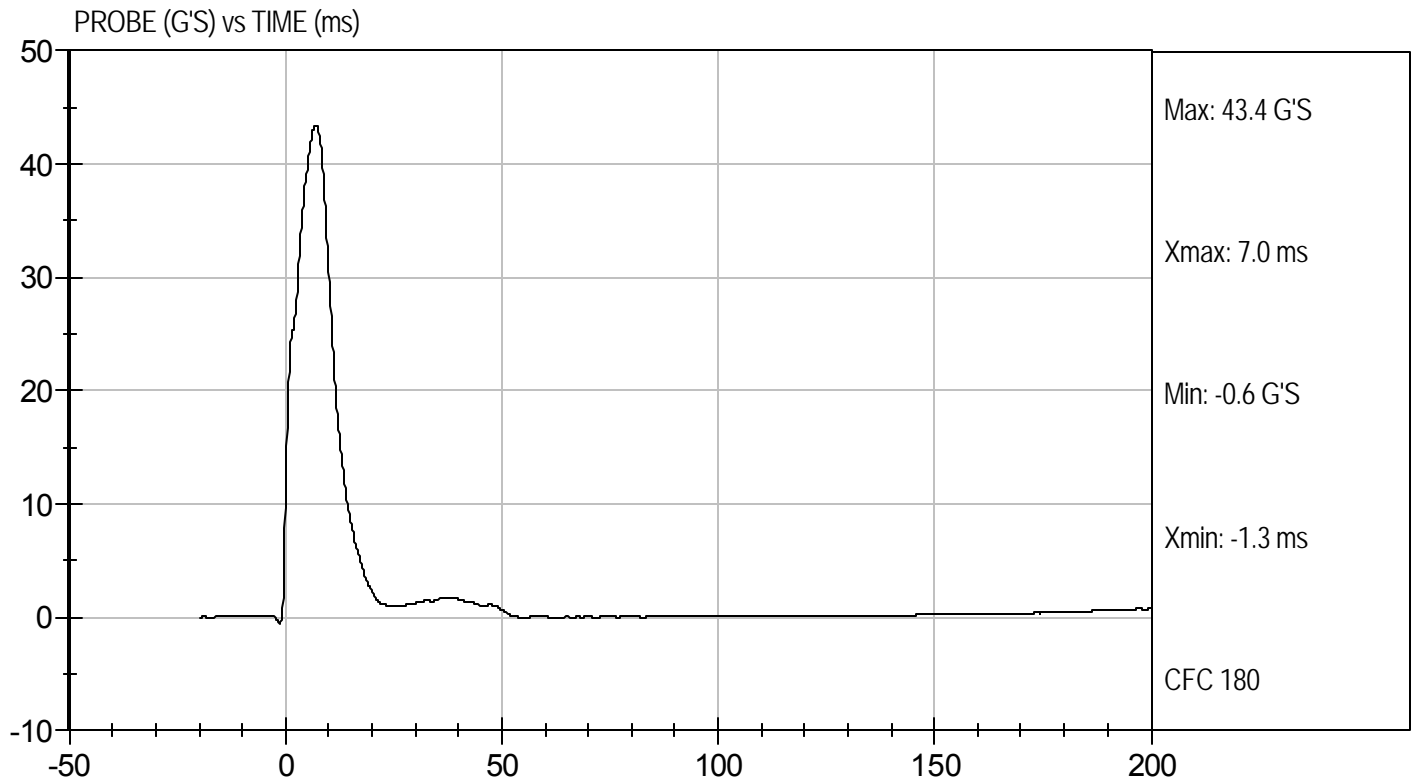
03/17/2010  
Test Date

  
Approved By



Test Desc: Pelvis Impact  
Component ID: D10797

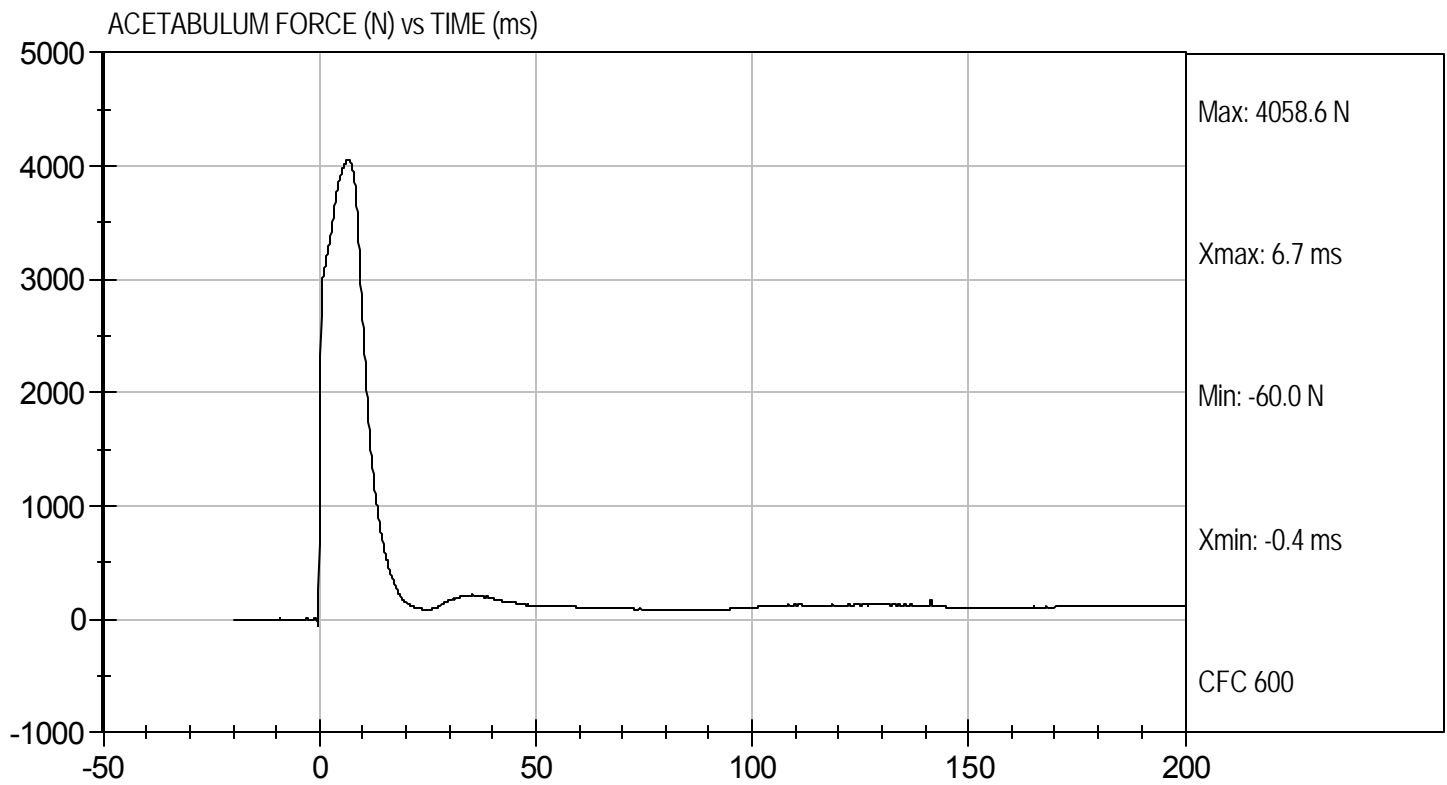
Test Date: 03/17/2010  
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Pelvis Impact  
Component ID: D10797

Test Date: 03/17/2010  
Velocity: 22.22 ft/s, 6.77 m/s



**MGA RESEARCH CORPORATION**  
**ILIAC IMPACT TEST**  
**SID-IIs BUILD LEVEL D DUMMY**

**ATD Serial No:** 262

**Test I.D:** D10798

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Peak Impactor Acceleration	G's	36 to 45	36	Pass
Pelvis Y Acceleration	G's	28 to 39	32	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4143	Pass
Overall Test Results				Pass

  
Laboratory Technician

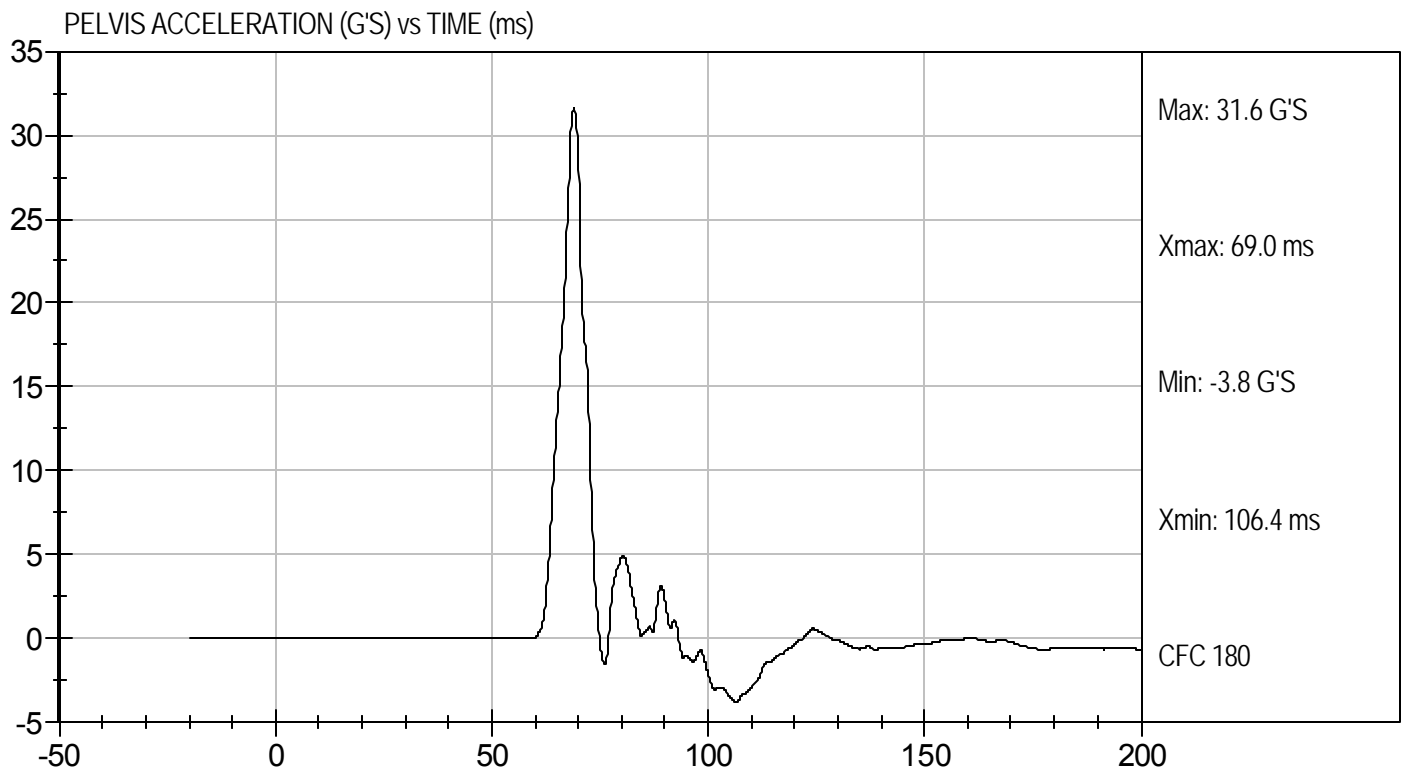
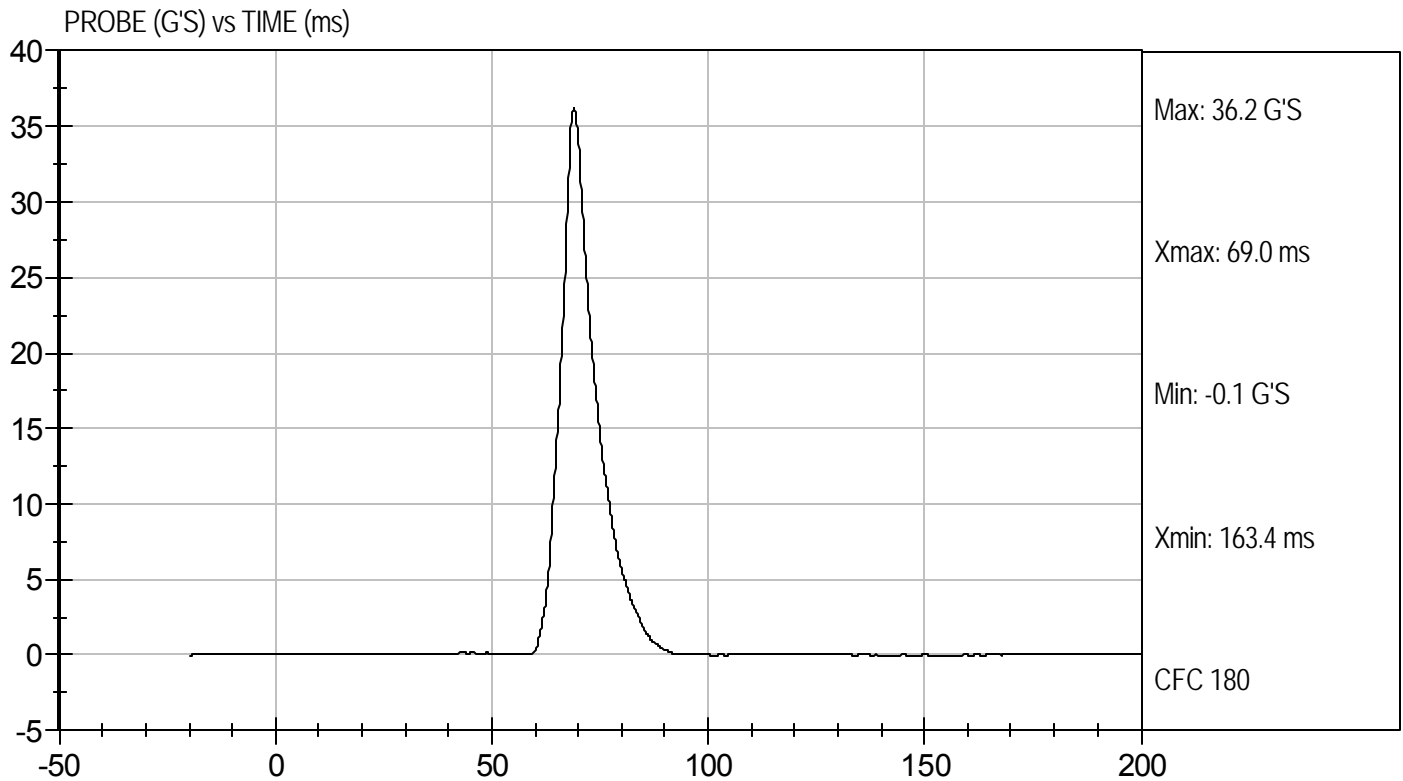
03/17/2010  
Test Date

  
Approved By



Test Desc: Iliac Impact  
Component ID: D10798

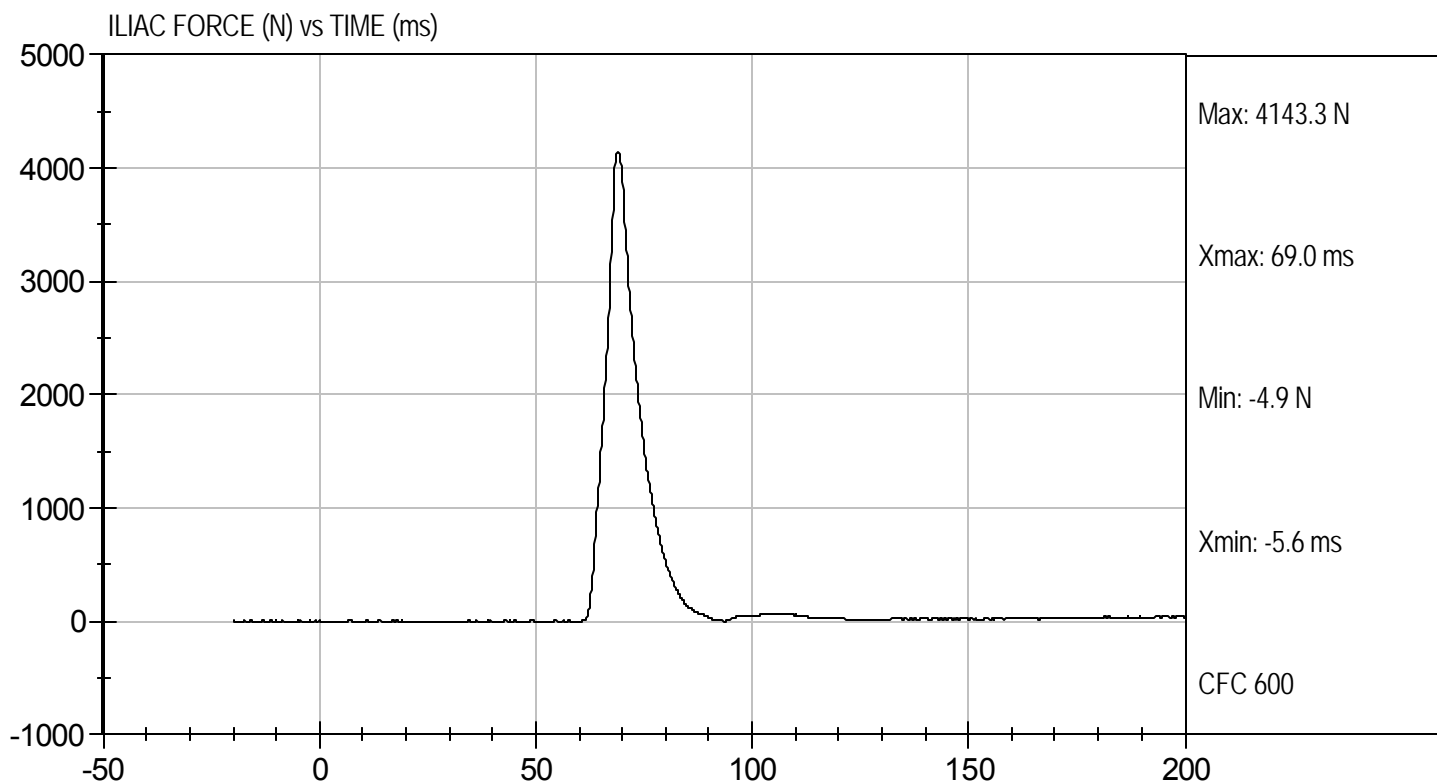
Test Date: 03/17/2010  
Velocity: 14.12 ft/s, 4.30 m/s





Test Desc: Iliac Impact  
Component ID: D10798

Test Date: 03/17/2010  
Velocity: 14.12 ft/s, 4.30 m/s



**APPENDIX G**

**TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION**



**Table 1 – Dummy Instrumentation**

		ES-2re S/N: 016		
		Serial Number	Manufacturer	Calibration Date
Head Accelerometers	X	P63402	Endevco	1/05/2010
	Y	P63403	Endevco	1/05/2010
	Z	P63404	Endevco	1/05/2010
Thorax Potentiometers	Upper Rib (Y)	G144	Honeywell	11/17/2009
	Middle Rib (Y)	G143	Honeywell	11/17/2009
	Lower Rib (Y)	G142	Honeywell	11/17/2009
Abdomen Load Cells	Forward (Y)	ABG119	FTSS	3/19/2009
	Middle (Y)	ABG120	FTSS	3/19/2009
	Rear (Y)	ABG121	FTSS	3/19/2009
Pubic Symphysis Load Cell (Y)		PG431	Denton	3/19/2009

			SID-IIs S/N: 262		
			Serial Number	Manufacturer	Calibration Date
Head Accelerometers		X	P49453	Endevco	1/06/2010
		Y	P49454	Endevco	1/06/2010
		Z	P49514	Endevco	1/06/2010
Rib Displacement Transducers	Thorax	Shoulder	G356	FTSS	1/19/2010
		Upper	G503	FTSS	1/19/2010
		Middle	G488	FTSS	1/19/2010
		Lower	G509	FTSS	1/19/2010
	Abdominal	Upper	G545	FTSS	1/19/2010
		Lower	G573	FTSS	1/19/2010
Lower Spine Accelerometers (T12)		X	P59298	Endevco	1/06/2010
		Y	P59299	Endevco	1/06/2010
		Z	P59300	Endevco	1/06/2010
Acetabulum Load Cell (Y)			ACG271	Denton	6/24/2009
Iliac Wing Load Cell (Y)			IWG184	Denton	6/24/2009

**Table 2 – Vehicle and MDB Instrumentation**

	Serial Number	Manufacturer	Calibration Date
Right Sill at Front Seat X	A29-F08	Entran	2/15/2010
Right Sill at Front Seat Y	A07-R16	Entran	2/15/2010
Right Sill at Front Seat Z	A04-R04	Entran	2/15/2010
Right Sill at Rear Seat X	P47819	Endevco	2/15/2010
Right Sill at Rear Seat Y	P47814	Endevco	2/15/2010
Right Sill at Rear Seat Z	P47817	Endevco	2/15/2010
Rear Floorpan Above Axle X	P47835	Endevco	2/15/2010
Rear Floorpan Above Axle Y	P47838	Endevco	2/15/2010
Rear Floorpan Above Axle Z	P47837	Endevco	2/15/2010
Left Sill at Rear Door Y	B10-Z23	Entran	2/15/2010
Left Sill at Front Door Y	A12-Z05	Entran	1/20/2010
Right Rear Occupant Compartment Y	P47900	Endevco	12/30/2009
Left B-Post Lower Y	D12-X26	Entran	11/21/2009
Left B-Post Middle Y	J07-H23	Entran	1/20/2010
Left A-Post Lower Y	F25-L05	Entran	2/15/2010
Left A-Post Middle Y	G29-X39	Entran	10/18/2009
Front Seat Track Y	A27-Z19	Entran	1/20/2010
Vehicle CG X	P47077	Endevco	1/20/2010
Vehicle CG Y	P45390	Endevco	1/20/2010
Vehicle CG Z	P45392	Endevco	1/20/2010
MDB CG X	P47894	Endevco	2/15/2010
MDB CG Y	P47895	Endevco	2/15/2010
MDB CG Z	P47896	Endevco	2/15/2010
MDB Rear X	P47897	Endevco	2/17/2010
MDB Rear Y	P47898	Endevco	2/17/2010